

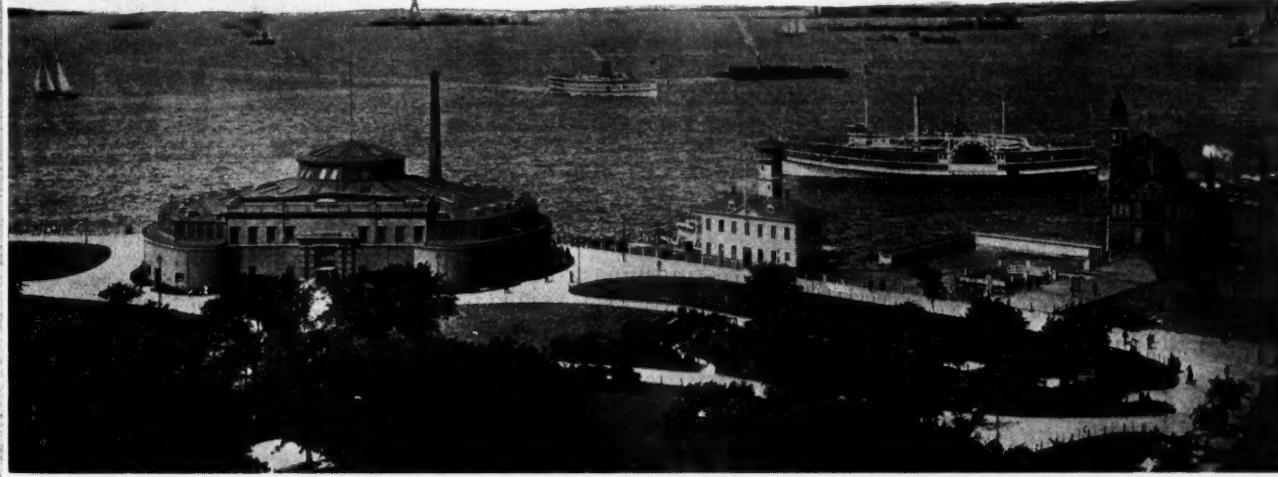
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POLLUTION OF NEW YORK HARBOR



GENERAL VIEW OF NEW YORK HARBOR, FROM THE BATTERY

SEWAGE OF TEN MILLION POPULATION

This Amount Will Soon Reach New York Harbor—What Measures Are Necessary to Prevent an Intolerable Nuisance—Data Collected by the New York Bay Pollution Commission

By KENNETH ALLEN, Engineer of the Metropolitan Sewerage Commission

In 1903 the New York Bay Pollution Commission was appointed by the Governor of the State to investigate "the conditions attending the disposal of sewage in the metropolitan district." The commission consisted of Messrs. Daniel Lewis, president; O. H. Landreth, Myron S. Falk, George A. Soper, and L. L. Tribus, secretary. A very considerable amount of data was collected and published in two reports. On the conclusion of the work of this commission in 1905 the matter was deemed of sufficient importance to cause the appointment in 1906 of a commission by the Mayor of New York, to continue these investigations; and this—the first Metropolitan Sewerage Commission—consisted of Messrs. Daniel Lewis, president; O. H. Landreth, George A. Soper, Matthew C. Fleming, and Andrew J. Provost, Jr., secretary. Further valuable information regarding the conditions of the waters of the metropolitan district was secured by this commission, but this was not collected and published until after a reorganization of the commission, which was made in January, 1908. The present commission, consisting of Messrs. George A.

Soper, president; James H. Fuertes (who succeeded Andrew J. Provost in 1906), Secretary; H. de B. Parsons, Charles Sooysmith and Linsly R. Williams, has recently presented in pamphlet form the results of the investigations made up to the time of reorganization in 1908. ("Digest of Data collected before the year 1908 relating to the Sanitary Condition of New York Harbor.")

I. WORK OF THE NEW YORK BAY POLLUTION COMMISSION

The work of the New York Bay Pollution Commission was confined to studies of existing conditions. Evidences of pollution were sought by bacterial and chemical analyses of the water and by inspection of the shores.

The waters of New York harbor may be considered in three classes: 1st, the Lower Bay, or those waters lying south of the Narrows, including Raritan Bay, Sandy Hook Bay and Jamaica Bay; 2nd, the Upper Bay, or the open water lying between the Narrows and the Battery, or southern end of Manhattan, which receives the waters of Newark Bay through the Kill von Kull from the west and the Hudson and East

Rivers from the north, the latter being merely a salt water connection between the Upper Bay and Long Island Sound; and 3rd, the Hudson and East Rivers and the Harlem River, which, in connecting them, separates the island of Manhattan from the main land to the north.

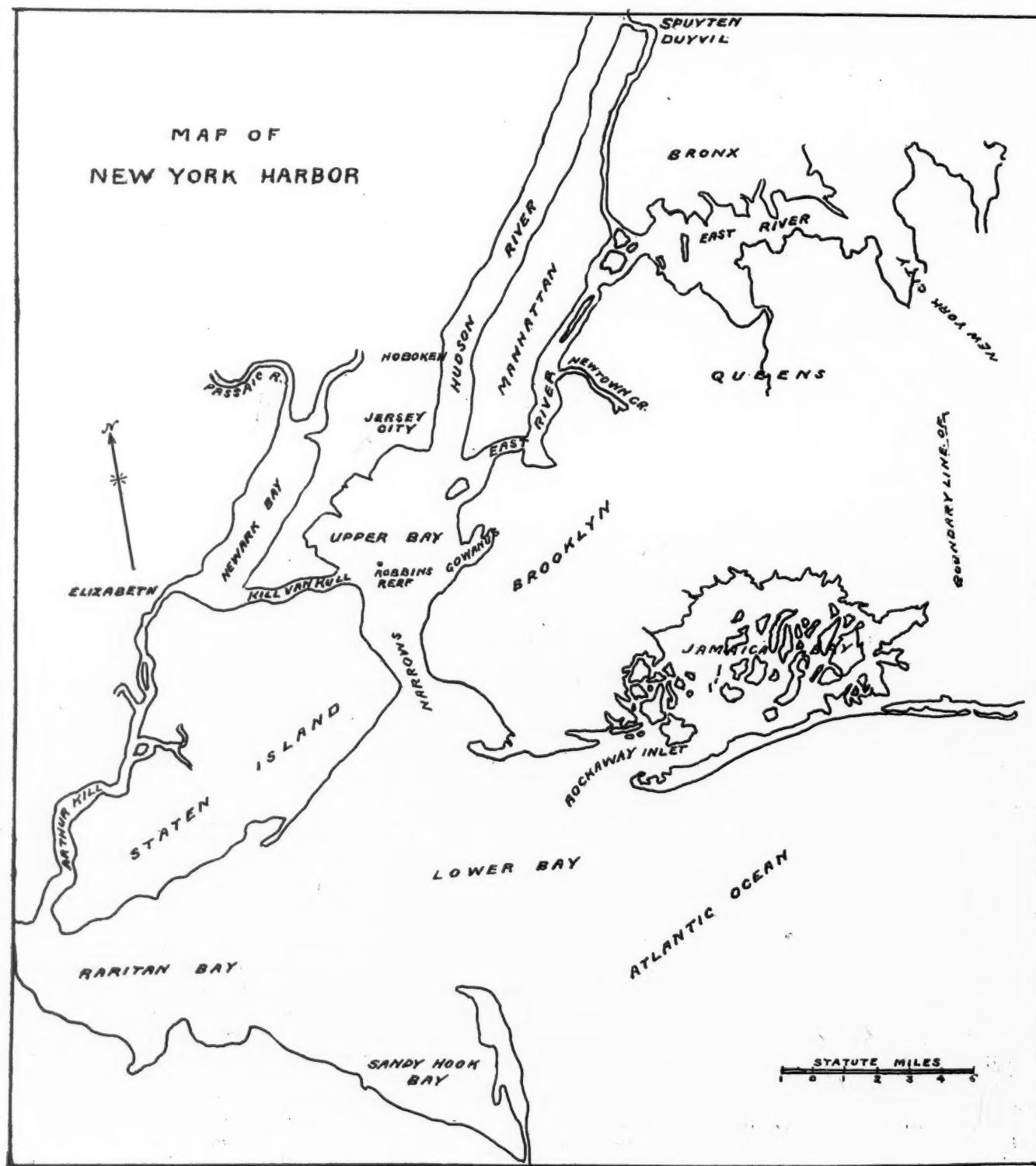
The earlier investigations were almost exclusively with reference to the Upper and Lower Bays.

INVESTIGATIONS OF 1903 AND 1904

Water samples were first collected in June, 1904, near the channels from the Battery to off Coney Island and plated in standard nutrient gelatin. After standing 48 hours bacteria counts were made showing from 2,000 to about 45,000 per c.c. This was taken to indicate a certain, though not very great, degree of pollution at the points of sampling. With the ex-

ception of some samples taken in Gravesend Bay, where there may have been local pollution, the numbers diminished with the distance from the Battery toward the ocean. Some tests for *B. coli* were also made, but the results of these were less conclusive. In general, however, the water of the Lower Bay was found, as might have been expected, of better quality than that above the Narrows; and samples taken on incoming currents were less polluted than those taken on outgoing currents.

Samples were taken in October, 1904, near the oyster grounds located on the southern shore of Staten Island in order to judge of their liability to infection from sewage. These were collected from the ends of piers located between St. George and South Beach about the end of the ebb current. The bacteria ranged from 26,000 near St. George to 5,000 at the more southern points.



A third series of samples was taken in Gravesend Bay in the same month, during a rising tide, which indicated pollution over the greater part of the shores. The bacteria counts were moderate, ranging from 3,000 to 9,000 c.c., but *B. coli* were noted in more than half the samples in 0.1 c.c. of water. A final series was taken two days later along the southeastern shore of Staten Island as far as Tottenville. Here the bacteria ranged from 900 to 60,000 per c.c. Lemon Creek, used for the storage of oysters was found to contain 13,000 per c.c. In general, the samples near centers of population—that is, between Rosebank and Midland Beach and from south of Great Kills—showed contamination, while the intermediate waters were relatively pure.

Oysters and clams were collected directly from their beds, opened with a sterilized knife in the laboratory and the contained liquids mixed with 0.1, 1.0 and 10 c.c. of fermentation broth. Although pollution was not always indicated, samples taken from polluted water were shown to be contaminated. Those grown along Staten Island were subject to pollution from the Upper Bay, the Raritan River and the Arthur Kill. Those from Great Kills and Swash Channel were open to the least suspicion.

Fourteen chemical analyses of the water of the Bay were made to determine the free and albuminoid ammonia. The former was believed to be of particular value as an indication of sewage pollution and in the interpretation of results a comparison was made with the amounts of free and albuminoid ammonia found in uncontaminated sea water, drinking water and sewage. It was found "that the water of the bay contained about $\frac{2}{3}$ as much free ammonia and about $\frac{1}{2}$ times as much albuminoid ammonia as pure sea water, and about $6\frac{1}{2}$ times as much free ammonia and about the same amount of albuminoid ammonia as the Hudson River at Poughkeepsie." The Upper Bay was found more or less polluted at all stages of the tide, but in varying degree, in this supporting the results of bacterial studies. Of the samples analyzed, those from near the Battery, Robbins Reef, the Narrows and Coney Island were the worst. Comparing samples taken on the incoming tide with those on the outflowing current the difference was not great. Sometimes the water of the flood current was found of inferior quality to that of the

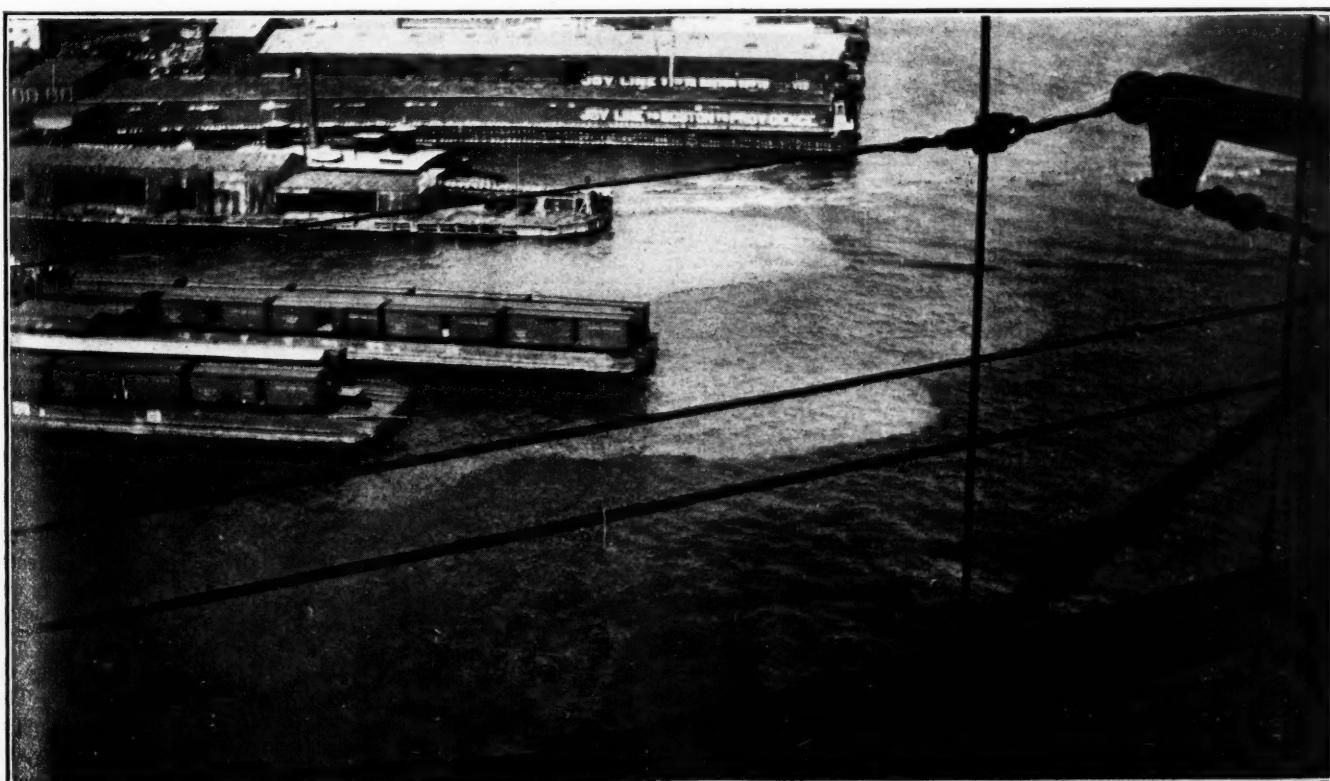
ebb, from which it would appear that the resultant sea-going current is subject to such variable local influences as to transfer, mix and disperse streams of greatest pollution, but without ensuring any prompt or certain removal to the ocean.

The flushing action of the fresh water and tidal currents, upon which the character of the harbor water so largely depends, was considered a matter of such importance that corroborative evidence of this phenomenon by a study of the salinity—or, rather, the chlorine—at different points was desired. Assuming 18,000 parts of chlorine to be present in one million parts of pure sea water the proportion of sea water in the sample was readily determined. About 80 analyses, made in part by the commission, were tabulated and compared. The proportion of sea water in the bay was found to vary very greatly with weather, season and tide. The general results may be summed up as follows.

Location	Per Cent Sea Water		
	Max.	Min.	Ordinary
Lower Bay	100	20	75
Narrows	77	43	65
Battery	69	15	45
Hudson at Spuyten Duyvil	44	0.5	

"There was as much sea water on some occasions in the Hudson at Croton Point as there was at other times at the Battery, 33 miles nearer the ocean." The reason for this variation is, of course, due chiefly to the relative volume of fresh water coming down the river at different times as compared with the more nearly uniform influence of the ocean tides; but unusual tidal conditions do, nevertheless, exert a marked influence on the salinity of the river for a considerable distance.

Briefly, the work of the years 1903 and 1904 consisted in the accumulation of data, chiefly by bacterial and chemical analyses, concerning the condition of the waters of New York Bay, from which it was concluded that pollution by sewage was quite general, but decreasing in the direction of the ocean; that over large areas this pollution was not great; but that along certain shores it was marked and of sufficient amount to seriously infect many of the oyster layings in the vicinity of Staten Island; and that the polluted waters of the Upper Bay do not pass directly to sea but oscillate back and forth, mixing with the inflowing currents, for indefinite periods.



DOCKS ALONG EAST RIVER, SHOWING DISCOLORATION DUE TO SEWAGE DISCHARGED AT EACH DOCK

INVESTIGATIONS OF 1906

Additional information concerning the oxygen available for the assimilation of organic matter, the relative pollution at different depths and the sanitary condition of the waters surrounding Manhattan and their shores being desired, studies to these ends were made during the year 1906 consisting of the examination of water samples chemically and for bacteria, and inspections of the shores and oyster grounds.

Samples examined for bacteria taken from depths of 5 and 80 feet in the Upper Bay showed much greater numbers near the surface. Tests for *B. coli* confirmed this result, many taken at depths of over 60 feet giving negative results. In the Lower Bay the numbers of bacteria were somewhat less than in the Upper Bay and fewer deep samples gave positive results for *coli*. The surface samples gave several times as many bacteria as those from near the bottom. Comparatively large numbers were found in samples from the East and Hudson Rivers and near certain sources of pollution, such as Gowanus Canal and Sixty-fourth street sewer in the Upper Bay. Bacteria counts in samples from the East River were more than twice as high as in those from the Hudson, the Harlem, the Upper Bay or the Staten Island shore. Samples from the Rahway River, in which oysters are stored for the market and which receives sewage from the city of Rahway and from Cranford, did not show large numbers of bacteria, but every test for *B. coli* gave a positive result. The bacteria in the Harlem samples were not as numerous as might have been expected, although the Hudson from the Harlem to Fortieth street was shown to be grossly polluted. The water at the mouth of the East River was nearly as polluted near the bottom as near the surface.

Three samples taken from the Gowanus Canal indicated extreme pollution, as might be expected. Samples from the lower Bronx River all contained *B. coli*, but the bacteria diminished in numbers from the dam toward the mouth, the samples being collected about high tide.

Tests for free and albuminoid ammonia and chlorine of samples from the Upper Bay showed a decrease of pollution and an increase of chlorine with the depth, although the former was not uniform. In the Lower Bay, however, pollution was greatest near both top and bottom layers, with purer water between.

The ammonias in the East River were higher than in the Hudson or Harlem, but there was little difference at different depths. The Hudson River, when examined contained much more chlorine at the bottom than near the surface. A sample from the bottom at 125th street contained 13 times as much chlorine as the average of the surface samples above Fortieth street, while off the Battery the bottom contained twice as much as the top layers. In the Harlem River the chlorine increased from the Hudson River to the East River.

Samples of water examined for dissolved oxygen indicated that in the Upper Bay there was an abundance of this element. In some instances it was found in greater volume near the bottom. It was thought this might be accounted for by the greater bacterial activity near the surface, but even there there was no present danger of the formation of offensive gases. The opposite condition was observed in the Hudson opposite Grant's Tomb. The only sample entirely devoid of oxygen was from the Gowanus Canal. Near the outlet of the Sixty-fifth street Brooklyn sewer and near the outlet of Gowanus Canal there was a deficiency due to organic pollution, but no lack of oxygen was observed in the Hudson or East rivers.

Careful inspections of the shores were made noting the character and amount of filth or refuse.

On the eastern shores of Staten Island above and below the Narrows and the shores of Brooklyn in the Upper Bay were found deposits of considerable quantities of garbage, refuse and dead animals, as well as the more objectionable solids discharged by the sewers. Generally speaking, the islands and the New Jersey shores of the Upper Bay were quite free from accumulations of this kind. Grease balls, evidently

derived from sewers discharging to the Upper Bay, were noted on the north shores of the Lower Bay, but in most respects these were quite clean. Large quantities of garbage, driftwood, etc., were found near Norton's Point and, in diminishing quantities, to the eastward along the Coney Island shore. The shores of Jamaica Bay were comparatively clean.

Among the various oyster grounds those in Bodine Creek, Staten Island, were found to be in a most objectionable condition, both the water and shores being very foul, while Bull's Creek, near the town of Sheepshead Bay, was in a similar condition.

During the life of the New York Bay Pollution Commission a good many facts regarding the condition of the waters about New York and their shores had been ascertained and certain important conclusions had been reached: pollution had not reached a very serious condition except in certain localities; the dispersion and diffusion of sewage was not thorough but subject to the variations in the tidal currents; the depletion of dissolved oxygen was not deemed serious except in a few grossly polluted localities, such as the Gowanus Canal; certain shores and oyster layings were fouled to an objectionable degree by garbage and floating matter derived from even remote sewers.

It was the opinion of this commission that the discharge of crude sewage by New York into the bay was not all that could be wished, but that the plan adopted by Manhattan of discharge at the ends of the piers was much preferable to a discharge at the heads of slips between the piers as formerly practised.

(To be concluded)

SEWERAGE AT FRODINGHAM

At Frodingham, England, are sewage disposal works designed to treat the sewage of about 3,125 people in the two communities of Brumby and Frodingham. Most of the sewage reaches the works by gravity, but that from about 90 houses requires to be pumped, which is accomplished by pneumatic ejectors located in two ejector chambers. These ejectors work by compressed air, which air is compressed on the spot by an electric motor which is started into operation automatically as the pressure lowers and stopped when it reaches the desired maximum. The sewage on reaching the disposal grounds passes through two sedimentation tanks having a joint capacity of 62,500 gallons, or one day's dry weather flow. The effluent from these passes to a distributing chamber from which it is taken through an automatic dosing siphon to three percolating or sprinkling filters. The sprinkling filters are circular, each 51 feet in diameter inside the walls, and 5 feet deep. The distribution is effected by means of Candy-Whitaker revolving sprinklers of the buoyant type, each with four arms. The beds are filled with hard clinker carefully screened and washed. They are drained by half-round tiles laid in straight lines across the beds. Immediately above these the clinker is that retained on a two-inch screen, the balance of the filter material being that between a 2-inch and 3/4-inch size. From the sprinkling filters the effluent passes onto three acres of land for final treatment. The cost of the 4 1/4 miles of 8-inch to 15-inch sewers, the sewer ejectors and air compressors, the chambers which contain them, and the disposal works was about \$45,000.

CLEANING WASTE

THE Water Department of the City of St. Louis, Mo., in 1906 installed a waste-cleaning machine which it believes has effected a great saving to the department. This machine cost \$250, and in 1908-1909 handled 31,455 pounds of soiled waste from which was reclaimed 1,241 gallons of oil. The amount of waste purchased was 6,377 pounds as against 15,660 pounds during the year immediately previous to the use of this machine. This saving in waste, added to the value of the oil recovered, \$198.56, gave a total saving of \$786.53. Estimated in the same way, the saving during the three years the machine had been in service amounted to \$2,319.60.

MACADAM PAVEMENTS AND PAVEMENT GUARANTEES

Guarantee Periods for Various Kinds of Pavements—Maintenance Bonds and Retained Percentages—Specifications for Macadam Pavements

BONDS, GUARANTEES AND UNIFORM BIDDING BLANKS

At the Chicago convention on Standard Specifications a committee was appointed to consider the subject of bonds, guarantees and uniform bidding blanks. Concerning the last it stated that it found the practice quite variable. Some cities include in pavement bids construction or reconstruction of subsurface drainage, grading and curbing. While there may be no objections to this practice considered entirely by itself, the value of a uniform bidding blank or uniform method of bidding, if it have any value, must lie largely in the facility it offers for comparison of prices; and this would be greatly complicated, if not almost valueless, should these various diverse classes of work be bid together in a lump sum. The committee, however, doubts the practical value of such comparison, even were blanks and methods of bidding made uniform, owing to the great differences in prices of labor and material in different parts of the country. It therefore does not recommend uniform bidding blanks.

The committee found that the practice of requiring a guarantee to insure proper maintenance of pavements is a common practice, but that the details differ widely. Ten years of maintenance are still insisted upon in some cities for all classes of pavements; five years for soft pavement, and three years and one year for the hard pavements are required in others; and City Engineer Fendall, of Baltimore, has recommended that maintenance periods be eliminated altogether, believing it practicable to obtain sufficient protection by specifications and inspection and thus avoid the additional cost of maintenance. The usual guarantee takes the form of either a bond, or a cash deposit or retained percentage, or both; the last being perhaps the most common. Recent practice is to receive the bond of a bonding company, although these have within the last year or two declined to write ten-year risks. New Orleans has abandoned the use of maintenance bonds because it has found it impossible to recover on the bond in any case. This is not the only city which has had this experience, but the committee found that a number of cities had found it impossible to recover from bonding companies upon default of the contractor to properly maintain the pavement, the bonding companies having demonstrated in court the insufficiency of their guarantees by their success in avoiding payment. In New Orleans the cash retained from the contractor is equal to 15 cents per square yard in the residential districts and 25 cts. per square yard in the business districts.

In view of these considerations the committee recommended:

First—That all pavements, any portion of which is constructed of materials of a perishable nature, among which we would include asphalt, bituminous macadam and wood block, or other pavement requiring special equipment to lay and maintain, and also such pavements as are of a patent or proprietary nature, new or more or less experimental in character, shall be required to be maintained for a period of five (5) years from the first day of July next following completion.

Second—That all pavements composed of materials more durable in character, among which we would include stone block, vitrified brick, and well-established Portland cement concrete pavements, shall be required to be maintained for a period of one year from the first day of July next following the completion.

Third—That in the case of all pavements, cash deposit, or its equivalent, of ten (10) per cent. of the contract price per square yard for each square yard of pavement be retained for the whole of the maintenance period, said sum with its accumulations, if any, to be paid in full to the contractor if he fulfills the terms of his guarantee. The reservation is to be subject, however, during the maintenance period, for use by the city in making such repairs as are necessary and have been neglected or ignored by the contractor. In the latter case the balance of the fund, if any, shall be returned to the contractor at the end of the maintenance period.

Fourth—We further recommend that if the bonding companies will offer a uniform and standard form of guarantee, satisfactory in form and cost to the cities, members of this association, which will protect the cities as amply and accomplish the purpose of keeping the pavements in repair as fully as may be done by the cash reserve plan, a guarantee bond in twice the amount of the established cash reserve be accepted in lieu thereof.

Fifth—In case of a satisfactory adjustment in the guarantee bond plan and its adoption by this association, it is further recommended that any default on the part of any bonding company in any of the cities of this association shall be reported to its secretary, and it shall be his duty to report to each of the said cities an account of such default.

The committee recognized that the contractor should either be required to construct a pavement under rigid specifications and then be relieved of responsibility for its success, or should be held responsible for its success and permitted to use his own judgment, between certain limits, in the construction of the pavement. If a city adopts closely drawn specifications for asphalt and similar pavements it should at the same time assume responsibility therefor and reduce the guarantee period to one year. The committee believed, however, that the other plan is preferable in the case of asphalt and similar pavements, because of the difficulty of insuring a perfect following of the specifications in both the preparation of the original material and also the mixing and laying of the same upon the street. Also, because the smaller cities cannot establish and maintain the special laboratories and experts required to properly inspect an original construction and subsequently maintain it. Longer than five years, however, the committee believes unnecessary, because that time is sufficient to demonstrate the excellence or otherwise of the pavement and a longer period imposes on the taxpayer in advance the cost of maintaining the pavement during a period too remote and under conditions too speculative to permit a proper estimate of the cost to be made in advance.

In the case of block pavements the materials and construction work are easily specified and inspected, and defects not previously discovered will develop in the pavement in a few months. Also, the repairing of such pavements can readily be done by the smallest city without expensive plant or tools, and in fact the amount of repair required after the first year will be practically nothing for a considerable number of years.

The committee recommended the adoption of a cash reserve plan in place of the bond of a bonding company because of the apparent valuelessness of such a bond. Also because, under the cash reserve, repairs can be made promptly when needed and the lawsuit, if there must be one, need not precede the repair. The requiring of both bond and cash reserve seemed to the committee unduly expensive, since if either is of value it is sufficient in itself and the cost of the other might be dispensed with.

In this connection the committee recommended that pavement specifications include the definition of the condition of pavement under which maintenance repairs will and will not be required under the guarantee furnished; there being at present too much indefiniteness on this point.

SPECIFICATIONS FOR MACADAM PAVEMENTS

The committee of the Chicago convention appointed to report on Macadam Specifications called attention in its report to the tendency to slight this class of construction because it was generally considered to be such an inferior one; but expressed its belief that, as in other pavements, the successful use of crushed rock depends altogether on attention to details. Even more than with other pavements, the condition of soil, class and amount of traffic, as well as character and quality of stone, should all be carefully studied. The committee believed that no macadam pavement could now be considered finished unless treated with some bituminous binder. It considered treatment by penetration only, however, as it assumed that the other methods would be considered by the committee on Bituminous Macadam. The committee did not attempt to go into the merits of the various bituminous substances offered for road treatment, but recommended that the instructions of manufacturers be followed in their use.

The specifications presented by the committee were as follows:

Specifications for Macadam

SUB-GRADE

The portion of the roadway indicated shall be excavated from the present surface thereof to a sub-grade, which, when properly prepared, in the case of Telford foundation, shall be 14 inches, and in macadam foundation shall be 12 inches, below and parallel

with the surface of the completed pavement. Said completed surface shall conform to the general cross-section of the street as indicated, and shall be thoroughly clean, all stumps, roots and sod or other vegetable matter removed and the sub-grade shall be rolled with a steam road roller weighing 10 tons, so the surface shall be exactly parallel with the proposed finished surface. All soft or spongy places shall be excavated and refilled solidly with gravel, broken stone or approved earth before the completion of the rolling. If, by reason of steep grades or other circumstances, it is deemed impracticable to use the steam road roller, the contractor will be permitted to use an approved horse roller upon application to and with the consent of the proper authorities.

TELFORD FOUNDATION

Upon the sub-grade thus prepared, rolled and accepted, there shall be placed a foundation of clean, hard, sound stone, broken into sizes which shall come within the following dimensions: Four to eight inches in width, 8 to 14 inches in length, and not less than 8 inches in depth. The stone shall be placed by hand vertically upon the broad edge and lengthwise across the roadway, so as to form a close, firm foundation from gutter to gutter. The projection of the stones above and below surface 8 inches above the sub-grade shall be broken off with napping hammers, and the pieces so broken off, together with other stones of suitable size and shape, shall be used as wedges to firmly fix the stone of the foundation in proper position, so that its top surface will be parallel to the sub-grade of the roadway and 8 inches above it.

Upon the roadway thus prepared, there shall be spread a layer of good clean earth, preferably clay loam, not to exceed 1 inch in thickness. The foundation shall then be thoroughly rolled with a steam road roller weighing not less than ten tons. In places where rolling is impracticable, the foundation shall be rammed with suitable rammers with the approval of the proper authorities.

MACADAM FOUNDATION

Upon the sub-grade prepared in the manner above described, shall be spread a layer of broken stone which, when thoroughly compacted as herein provided, shall be not less than 6 inches in depth. The stone in this layer shall be practically uniform in quality and as near an approach to a cube as possible and broken so that its greatest dimension shall not exceed 4 inches and the smallest dimension not less than 2 inches; all to be free from dust, dirt and screenings. All stones which do not approach uniformity of measurement shall be rejected and removed from the roadbed. No stone shall be allowed to remain which are not sound, strong and equable in size and quality. This layer of stone shall be thoroughly rolled with a steam roller weighing not less than 10 tons, without the application of water.

SECOND COURSE

Upon the above-described foundation shall be placed a layer of broken stone whose greatest dimension shall not exceed 2 inches and the least dimension shall not be less than three-quarters of an inch to a depth which, when compacted as herein specified, shall be 4 inches. This stone shall be thoroughly rolled with a 10-ton steam roller and sufficient clean stone screenings and water shall be spread over its surface to afford, when the rolling is completed, a practically smooth, dense and hard surface. When the second course as herein specified is completed, there shall be spread upon it a layer of stone ranging in size from 1 inch to $\frac{1}{2}$ inch in the greatest dimension which, when compacted, shall be 2 inches in depth. This latter shall be thoroughly rolled and compacted with the 10-ton roller without the application of water, until the stone ceases to creep before the rolls of the machine. The rolling herein specified must be generally begun at the curb or gutter line and rolled from curb to crown, the shoulders first being rolled so as to prevent the spreading of the stone.

BITUMINOUS FILLER

After the macadam pavement as above specified shall have been thoroughly rolled and when it is in a bone-dry condition, it is to receive a bituminous treatment applied as follows: The surface must be clean, free from dust, dirt or foreign matter, the bitumen applied in an approved manner and at a temperature of not less than — degrees Fahrenheit, and in sufficient quantity to cover all parts of the surface and in quantity not less than $1\frac{1}{2}$ gallons and not more than 2 gallons to a square yard of surface. After the application of the bitumen and after it has had time to set, there shall be applied a coating of clean stone chips whose greatest dimension shall not exceed $\frac{1}{2}$ inch and whose smallest dimension shall be no less than $\frac{1}{4}$ inch, sufficient to absorb all of the excess of bitumen, and the whole shall be rolled and rerolled until it presents a smooth, hard, dense and granular surface.

These specifications complete the list of those prepared at the Chicago conference—probably the most valuable yet compiled by any body or society.

WOOD BLOCK SPECIFICATIONS

By CLIFFORD RICHARDSON, M. Am. Soc. C. E.

Two forms of specifications for wood paving blocks have recently appeared in the engineering journals, one adopted by the Highway Engineers of the various boroughs of the city of New York and another recommended by a committee of city engineers and other officials which met in Chicago during the last week in February. Both of these specifications have been claimed to be "broad enough to include any antiseptic and waterproof oil which will accomplish results desired," while the committee report states in regard to those which it recommends, that they would "enable any manufacturer to make block that would conform to the specifications and at the same time permit local engineers to adapt the same to conditions in their cities."

While these statements may seem possible to the municipal engineer who is not deeply versed in wood block treatment, a close examination by an expert of each of them shows that they are both tightly closed and call for the use of a coal tar product which is entirely controlled by one corporation and that, therefore, no real competition is possible under such specifications.

In the New York specifications nothing appears at first glance to lead to the belief that a coal tar product is the only one which will meet the requirement called for. On a closer examination the following clause is found:

When distilled in the manner hereinafter described, the oil shall lose not more than 35 per cent up to a temperature of 315 degrees centigrade. The distillate between 255 degrees centigrade and 315 degrees centigrade shall have a specific gravity not less than 1.02, the said specific gravity being taken at a temperature of 60 degrees centigrade.

The requirement that the distillate mentioned shall have a specific gravity not less than 1.02 excludes everything but the coal tar which has been mentioned. Had this been reduced by two or three hundredths, it would have admitted other material. These specifications do not openly state that a certain type of coal tar is required, but conceal this under a provision which does not attract attention, at least of the engineer who is not familiar with oils.

In the specifications recommended by the committee of the convention at Chicago, it is plainly stated:

The oil used shall be a coal tar product free from adulteration of any kind whatever and shall comply with the following requirements:

1. The specific gravity shall be at least 1.10 at a temperature of 38° C.

This committee calls more frankly for coal tar, but at the same time specifies a specific gravity which can only be met by a tar which is controlled by one corporation.

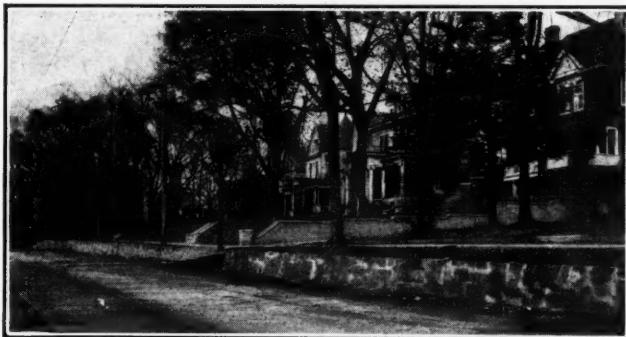
Tar of the kind that has been called for is a coke oven by-product, produced on a limited scale and completely controlled by one corporation. It cannot be obtained in the open market and will only be supplied to individuals under certain conditions. The coal tar produced in the manufacture of ordinary illuminating gas would be equally satisfactory for preserving wood were it not that it carries such a large percentage of soot that it cannot be forced into the fiber of the timber, whereas coke-oven tar contains not more than 3 per cent and is suitable for this purpose. This coke-oven tar has been used but a few years as a timber preservative, certainly not longer than other tar, not derived from coal, of equal gravity and with equally satisfactory results. Water-gas tar, produced in the manufacture of water-gas is, after the removal of the lighter portions by distillation, a material which has a very similar specific gravity to the coke-oven tar and is equally stable and quite as suitable for timber preservation, as has been proved by the fact that conduits treated with it have remained under ground for 23 years without deterioration. Paving blocks have been treated with it satisfactorily for many years and the company which is now promoting the use of coke-oven tar used it as a preservative oil before adopting the latter material and, presumably, changed to that material because it could be controlled, whereas the supply of water-gas tar became available to anyone interested in timber preservation.

In consequence of what has been stated above, it is most important that municipal engineers should be informed in regard to the situation, if competition is desired in bidding for the construction of wood block pavement, since true competition cannot be obtained under either of the recent specifications which have been mentioned.

SOME CURB DETAILS

Treatment of High Curbs in Business and Residence Streets— Steps in Curbs—Curb Corner Guards—Details of Concrete Curb and Gutter

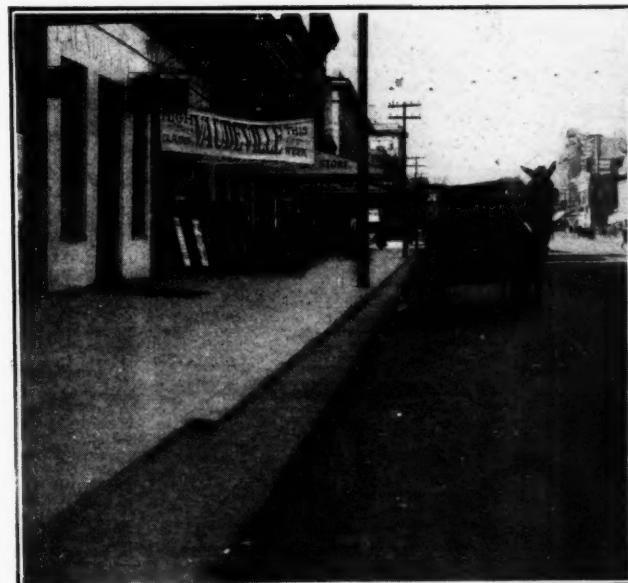
It is generally considered that the proper height for a curb is from 4 to 6 inches, less than this being insufficient to protect the sidewalk from vehicles or from water flowing in the gutters, and more than 8 inches making an undesirably high step. There are cases, however, where a higher curb is necessary or desirable for weighty reasons; as when, in paving a street which has already been provided with permanent sidewalks of a good character, it is thought desirable to lower the grade of the roadway. In a number of such cases the sidewalk also is



HIGH WALL CURB

lowered, thus adding greatly to the expense of the work and frequently leaving the adjacent properties at an undesirable elevation above the sidewalk. Still more imperative, however, is the existence of well-grown shade trees along the sidewalk, which it would be criminal to destroy.

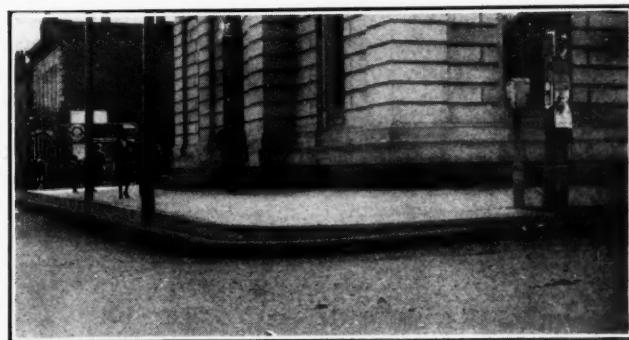
If the street is not a business street there would seem to be no serious objection to having a high curb, the sidewalk being brought down to the level of intersecting cross streets either by a slope at each end of the block or by steps at the curb line. Such a condition is shown in one of the illustrations, where a stone wall from 3 to 5 feet high serves as a curb and permits the saving of the fine old shade trees. In about the middle of this wall is seen a wooden bridge crossing the gutter to the level of the sidewalk. This is at the intersection of a cross street to the right from the main street and illustrates another method



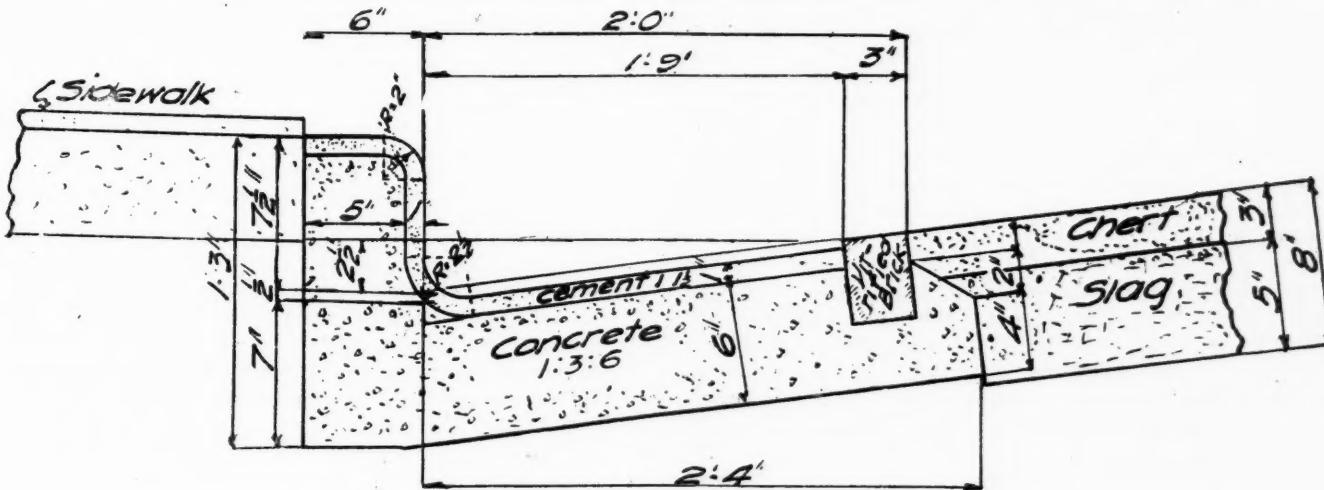
STEP AT CURB, CAUSED BY LOWERING GRADE

of carrying a high sidewalk across an intersecting street. Such a bridge, however, obstructs 10 feet or more of the main roadway and such construction cannot be recommended except where the width of the roadway is much greater than is necessary for the traffic.

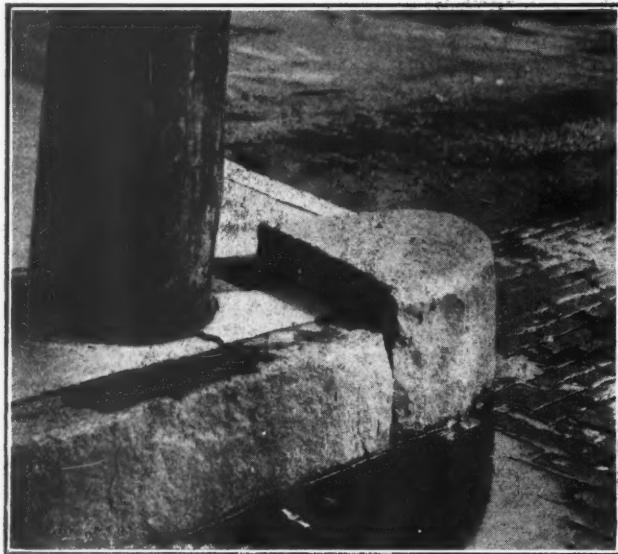
On business streets, where citizens desire to cross and recross the streets at all points without a detour to an intersecting street, such a high curb would be undesirable under any conditions; but one 12 to 18 inches high may be used by either inserting steps at every 50 feet or so, or by carrying a continuous step the entire length of the curb. The latter construction is shown in two of the accompanying illustrations. In this case, as the height of curb gradually tapers out it is probably better to reduce the height of the upper step rather than the lower



CURB STEP, COLUMBIA, S. C.



CONCRETE CURB AND GUTTER, WITH VITRIFIED BRICK EDGE



CORNER CURB STONE, MEMPHIS

one, as, if the lower one be gradually run out to nothing, wheels of vehicles might mount it at the end and travel along it.

Even with a 5 or 6-inch curb teams have been known to cut off a sharp corner by driving across the angle of the sidewalk. This is best avoided by curving the curb with a radius of 6 to 10 feet at the corner. An unusual method of preventing this practice of cutting corners is found in Memphis, Tenn., where, at each curb intersection in many of the older parts of the town has been placed a heavy block of stone which rises 3 or 4 inches above the level of the remaining curb and sidewalk.

The construction of cement sidewalks has in a number of cases resulted in a throwing of the curb out of line by the expansion of the walk. The more common way of preventing this is never to bring the sidewalk pavement closer to the curb than, say, 2 inches, and to leave this space open to fill up with dirt. A plan adopted in Chattanooga is to place the wearing surface of the sidewalk a little higher than the top of the curb, so that, if it expands, it may slide over the curb. This and the general construction of the concrete curb and gutter are shown in one of the illustrations. Incidentally this shows another construction which is general in Chattanooga, that of dropping the gutter one-half inch lower than the roadway, a line of vitrified bricks being inserted between the two to form the shoulder. In some cases, where the gutter flow is large, two lines of brick are placed, giving a total rise of an inch from the gutter to the roadway surface.

SANITARY PATROL OF WATER SHEDS

In the State of New York there are about 350 public water supplies derived from surface or underground sources, of which about 50 are from lakes, ponds or artificial reservoirs, and 100 from rivers, brooks or other running streams. One of the duties of municipal water boards or water companies is the protection, so far as their authority permits, of these supplies from pollution. In discussing this subject Mr. Theodore Horton, Chief Engineer and Director of the Division of Sanitary Engineering of the New York State Department of Health, states that systematic inspections are absolutely essential to this. These inspections should be made at least once a month on smaller water sheds and in the danger zones of the larger ones, and never less than four times a year. In the latter case the times of inspection should be fixed to occur at those seasons when pollution is most probable, as during late winter or early spring when melting snow may carry a large amount of surface pollution into the streams over the frozen soil. It is also desirable to inspect sheds during the season when farmers are fertilizing their fields; also when they are frequented by summer visitors. The inspector should have two points especially in mind; first, the detection and removal of cases of pollution; second, the detection and quarantine of

typhoid cases. So long as a typhoid case exists upon the water shed special precaution should be taken and constant vigilance. It should not be taken for granted in any case that instructions are followed in the care of typhoid patients.

Where there is any question as to whether or not the location of a pig pen or any other condition threatens the purity of the supply, the Water Department or company may appeal to the State Commissioner of Health, who will formulate specific rules and regulations for the protection of the water shed after an examination of the shed by a sanitary engineer of the department.

It was thought a few years ago that organic pollution of any nature was a menace to a water supply. Later information, however, has led to a more rational view and a distinction between those classes of pollution which are fundamental causes of disease transmission and those which are merely disagreeable or unpleasant. This means, says Mr. Horton, that pig pens or piles of rotting vegetables are in themselves harmless; and if they are not accompanied by other conditions or habits of the occupants of the farm which are dangerous, do not necessarily call for any radical action. It may very well be, however, that the *wholesomeness* of the water requires restriction as to drainage from any considerable quantities of such offensive matter. While the restriction against these, however, need not necessarily be rigid, those against human wastes, which may contain typhoid bacteria, can not be too strictly enforced.

The means or channels of infection are almost innumerable and it is only by a careful study of the possible means of transmission of infection and the local conditions of a water shed that the danger spots thereon can be discovered and entirely eliminated or controlled. Owing to this multiplicity of channels, the effort should be to control the infection at its source rather than to intercept it in transit. To permit the exercise of that special care which should be had when typhoid cases exist upon the shed, house to house inspection should be made at frequent intervals and all physicians whose practice might call them upon the shed should have urgently called to their attention the necessity of immediately reporting any such cases.

FOUNDATION ENCROACHMENTS

THE Public Service Commission of New York, First District (New York City), has called to the attention of the Board of Estimate and Apportionment the encroachment by foundations upon space in the streets that is owned by the city and is likely to be needed either for subways or for ducts. A letter, which is signed by Chairman William R. Willcox, says in part:

All of the street space between property line and property line in Lower Manhattan is to-day needed for sub-surface structures of a public character. The north and south streets of Manhattan are none too many to allow space for future subways, sewers, gas and water pipes and various conduits. In Manhattan the practice of spreading foundations has already gone so far that much needed space in streets has been taken, and if the city enforces its legal rights to tear out these foundations, some of the large buildings will be affected. The Commission has been impressed with the urgent need of preserving all sub-surface of streets for public purposes. Your honorable board will know best what steps to take to bring about a cessation of this practice.

FIRE CISTERNS

A NUMBER of cities still retain old fire cisterns as a supply of water, even after the introduction of complete water supply systems, and quite a number are even constructing new ones. We have previously described the cisterns being built by San Francisco, the chief reason for which probably was the fear that the supply through water mains might again be interrupted by an earthquake. The Fire Department of the District of Columbia believes that such cisterns are desirable on general principles, and in a recent report has recommended that six new ones be built along Seventh, Ninth, Thirteenth and Fourteenth Streets.

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Readers are invited to contribute to the MUNICIPAL JOURNAL AND ENGINEER, either in the form of special articles or of letters discussing matters of current interest.

It is also desired that the facilities furnished by the reference library in this office should be widely known and freely used by those interested in municipal affairs. Visitors will be welcomed and provided with conveniences for search, and inquiries by mail will be promptly dealt with.

MARCH 23, 1910

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Economy in Municipal Reports

No reader of this Journal would accuse us of taking exception to the publication of information concerning the doings of city departments, as we believe that not only is the citizen entitled to know, through annual reports promptly issued, what has been done by each of the several departments, but we believe that the officials themselves will find the opinion in which they are held and their general relations with the public more satisfactory for such publicity. There are a number of cities,

however, where, either because of the requirements of the charter or because of a lack of perspective or realization of the true value of such reports, a great deal of money is wasted in producing a report which not only contains reams of paper containing figures and statements which it was unnecessary to print, but by this very plethora buries in the chaff the few grains of valuable wheat which the report actually contains.

We have in our hands the report of a city of about 65,000 population which contains nearly 600 pages. We do not believe that a report for general distribution of any city on earth should be as long as this. If this amount of matter is all of real interest to the citizens it should be issued in separate reports by individual departments. That this amount of space was unnecessary in this case is very apparent, however, from even a hasty inspection. For instance, the report of the Department of Public Works occupies eight pages with introductory matter, five of these being absolutely blank, two containing titles in somewhat different forms and the eighth containing the letter of transmittal. Following this are given in detail the complete history of each resolution introduced at the weekly meetings of the Board; at least one resolution having been introduced for each item of public work acted upon. These resolutions occupy 36 pages. The public work ordered by the Board is occasionally summarized in tables, which tables are printed upon one side of the paper, the other page being blank. Following this are descriptions of all the public buildings and grounds of the city, a photograph of each occupying an entire page, and a description of the same, in some cases not more than five lines long, occupying the entire page facing this; in addition to which six intermediate pages are entirely blank. As is the case in a number of city reports, each department seemed to think it necessary to give a complete inventory of all property in the greatest detail, the meter department, for instance, itemizing in a line by itself each file, chisel, glass cutter, etc., apparently only stopping short of itemizing each nail.

Now all this itemizing may result from a desire to present all the facts to the public so that nothing can be concealed, but this is a very wasteful and ineffective way of attaining this end. The average citizen upon opening such a report would be immediately overwhelmed with the mass of detail and would lay the book down without learning anything whatever, even the most general facts, concerning the work of the departments. The exceptional citizen who is anxious to study the doings of any department in all its details should be able to obtain these by consulting the books of the department, and if he has any serious desire to do so these books should be placed at his disposal under such restrictions as are wise and necessary for their proper use in the general transaction of business of the department.

As a matter of fact these very detailed reports ordinarily give less real information than many of those of not one-tenth their length. For instance, the Sewer Department tells the lengths of each size of pipe purchased throughout the year, possibly the exact date of delivery of each order; also it gives in detail the sums spent each month for labor, for repairing, tools, etc. There are, however, no data available by which to determine how much any particular line of sewer cost complete. In the same way the Street Department describes to the inch the exact location of each piece of pavement laid, but the report may be searched high and low for any statement of the cost per square yard of such pavement or any information as to the life of pavements which had been laid in previous years, or whether this pavement replaced an old one and if so, what and why.

Our idea of a municipal report is one which gives the citizens real information in such form that he can easily comprehend it, and not merely a mass of heterogeneous minutiae. The value of a report does not lie in its gross weight or the size of the printer's bill, but in how much the average intelligent citizen learns from it concerning the work done by the various departments of the government which he supports.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Police and Fire Items—Government and Finance

ROADS AND PAVEMENTS

Squabble Stops Road Building

Atlantic City, N. J.—Litigation over the proposed paving of the Shore road section of the auto route between Philadelphia and Atlantic City is delaying State approval of the building of other highways in the county. The Board of Freeholders was informed from the office of State Road Commissioner Gilkyson that no further operations would be sanctioned until legal settlement of the Shore road controversy has been reached. The ruling prevents construction of the road between Mays Landing and Tuckahoe, for which contracts were to have been let.

New Bridge Nears Completion

Bethlehem, Pa.—One of the finest bridges in this State, from an artistic standpoint, is the new Broad street structure, which spans the Monocacy Creek here, on which the finishing touches are now being put. Second to the somewhat similar famous Walnut Lane bridge, which spans the Wissahickon in Fairmount Park, Philadelphia, this bridge is said to be the largest in the State. Covering more than 100,000 feet of area, the bridge is nearly 400 feet long and 60 feet wide. Its five massive arches stand more than 100 feet high. The balustrades are patterned after those on the Walnut Lane structure. To the visitor the appearance of the bridge is that of granite. This effect has been skillfully

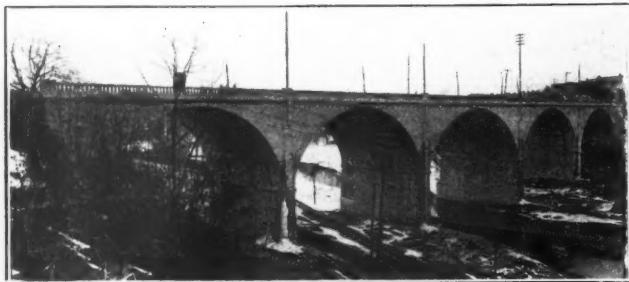


Photo by G. A. Conradi.

NEW CONCRETE BRIDGE AT BETHLEHEM, PA.

brought about by the use of granite gravel in the outside coat of cement, which has been chipped by a pneumatic tooling process. The roadway of this handsome structure, of which Bethlehem people are very proud, will be laid in brick, across which will be laid double trolley tracks. The sidewalks will be slightly higher than the roadway. Handsome combination gas and electric light fixtures will be placed on ornamental posts. It is largely in the simplicity of the bridge that its artistic features lie. Under the leadership of Chief Burgess W. E. Martin the citizens are planning a monster celebration late in the spring or early summer, when the new bridge will be fittingly dedicated. It has been already opened to traffic, though not quite completed. The cost of this bridge will be between \$125,000 and \$150,000.

Would Create Monopoly by Accepting Low Bids

Baltimore, Md.—An amendment has been made to the \$5,000,000 annex loan bill which it is claimed is in the interest of asphalt paving contractors. Bids are received on different kinds of paving in Baltimore, and according to the Bruce-Fendall ordinance the city authorities may select any kind of material they think best regardless of which is the cheapest. The amendment referred to would compel the acceptance of the lowest bid in all cases. As asphalt is the cheapest material, this, it is said, would lead to a monopoly.

Decides to Lay Sidewalks by Day Labor System

Holyoke, Mass.—The Municipal Council has decided not to allow any more sidewalk construction to be done by contract. It is believed that the city can do the work as cheap or cheaper than by contract.

Improved Streets to Follow Tour of Mayor

Chicago, Ill.—Chicago's streets passed in moving panorama under Mayor Fred A. Busse, B. J. Mullaney, Secretary to the Mayor, and Frank T. Fowler, Superintendent of Streets, in a 108-mile automobile ride one day last week. The trip took from 8 a. m. to 5 p. m., every ward in the city was visited and the Mayor was surprised with the sight of dirt, dilapidated pavements, holes chopped by public utility corporations and streets made impassable by the rehabilitation of street car tracks. As a result of the trip the following results are expected:

Street cleaning on north-and-south streets to begin at once.

Renovating of all alleys, to be started within ten days.

Repair of macadam, asphalt, brick, creosoted and cedar block pavements as soon as weather conditions will permit.

Granite block repairs, to be made at once.

The gas company and other public service corporations which have torn up perfectly good pavements to be compelled to make repairs forthwith.

Street car companies to repair streets where they have rehabilitated their lines, especially the Consolidated Traction Co.

Plans for the removal of street sweepings, garbage and ashes on street cars, to be formulated as soon as practicable.

Prosecution of building contractors who use the streets for construction material without permits.

Put an end to the practice of leaving wagons, buggies and other vehicles on sidewalks over night.

Prosecution of persons who dump ashes on the sidewalk.

Steam roads to clean and repair the streets below their viaducts within a reasonable time.

The Mayor was particularly aroused over the number of pavements that have been mutilated by corporations putting in pipes and conduits. Each Ward Superintendent will be ordered to report at once all such places in his territory.

Likes Sarco and Mineral Rubber Pavements of Chicago

Independence, Kan.—City Engineer A. D. Stivers has made a report to the Commissioners on his observations of Sarco and Mineral Rubber paving in Chicago. He said that he found Sarco in use on park driveways having greater traffic than any street in Independence. He saw no sign of ruts, holes or roughness in any of it, and the crown was preserved in its original shape in all cases. The Mineral Rubber paving, a more expensive material, used for resurfacing old macadam and brick, as well as for new work on a concrete base, impressed Mr. Stivers very favorably.

Complain of Quality of Asphalt Used

Muskogee, Okla.—Property owners on Elmira street have complained to the City Council of the quality of asphalt being laid on that street by the Oklahoma Contracting Company. The contract called for Trinidad asphalt, and it is alleged that from 35 to 45 per cent of Texas asphalt is being mixed with it.

Ohio May Sell Canals to Build Roads

Columbus, O.—The House Committee on Public Ways and Turnpikes has recommended the passage of a bill which provides for the sale of all canals and canal property, the proceeds to form a State good roads fund.

Standard Widths of Roadways Adopted

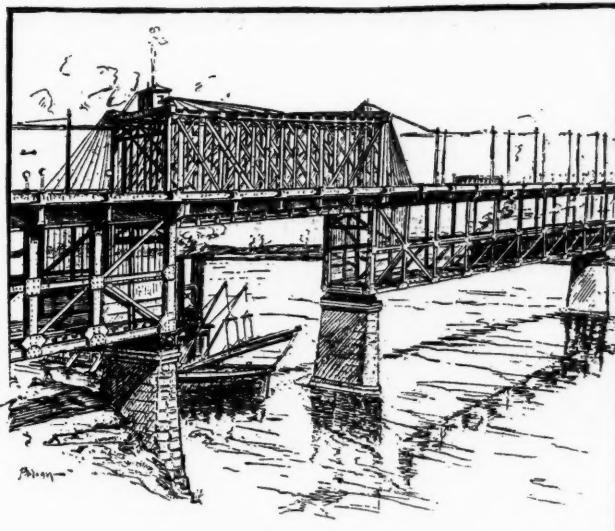
Pasadena, Cal.—Council has adopted the following standard widths of roadways for streets of certain lengths:

Total width of street—ft.	To 1500 ft.	1500 to 3000 ft.	3000 to 5000 ft.	Over 5000 ft.
40	20	22	24	26
45	22	24	26	28
50	24	26	28	30
55	26	28	30	32
60	28	30	32	34
65	30	32	34	36
70	34	38	40	42
80	38	42	44	46
100	50	54	58	60

The ordinance does not apply to streets having car lines. A number of exceptions are made to the general rule, and Council retains authority to suspend the ordinance in particular cases.

Unique Telescoping Bridge

Kansas City, Mo.—A unique two-deck steel bridge, costing \$2,000,000, is being constructed across the Missouri River from Third street, Kansas City, to the Clay County side. The structure will rest on the old Winner piers built years



NEW BRIDGE AT KANSAS CITY

ago and hitherto unused. The lower level, 65 feet below the upper, will be used for railroad tracks. The unique feature is the immense elevator in one of the spans that will hoist the lower decks and make an opening 426 feet wide, with 55 feet clearance above extreme high water. The upper deck of the bridge is to be occupied by two street car tracks and two wagon road tracks paved with asphalt and two sidewalks.

Asphalt Roads in Massachusetts

Boston, Mass.—It is the expectation of the Massachusetts Highway Commission to extend the use of asphalt compounds for the coming season in its road making. The general opinion of its engineers last year as the season progressed was that the asphalt products were more reliable and gave better results than the tar products, also that it appeared that the asphalt would wear for a greater length of time. As a result of its experiments, the Commission treated many miles of macadam surface, which was badly worn, by filling all ruts, holes and depressions with a mixture of asphalt, oil and gravel, or a sharp sand, or stone and stone screenings; the road being evened up and brought as nearly as possible to a uniform smooth surface. Then the road was coated with from one-fourth to a half gallon of hot asphalt oil to the square yard. The oil was laid on as evenly as possible over the surface, being spread with a broom where necessary. It was then immediately covered with sand, gravel or screenings spread evenly over the road surface in sufficient quantities to absorb all of the oil. If oil appeared, it was covered from time to time so that no oil should come in contact with passing vehicles.

Grade Crossings Before Council

Minneapolis, Minn.—The several commercial clubs of Minneapolis have been invited to name representatives to sit with the Special Grade Crossings Committee of the City Council, which will meet daily to grapple with the grade crossing problem. The need of engaging a special attorney was discussed, as was also the advisability of enlarging the committee by adding one alderman from each ward not now represented. The committee's present attitude points to the framing of a general ordinance for the elimination of all grade crossings in the city, with the Milwaukee road's plan for lowering the H. & D. tracks as the starting point.

Indicted for Bad Roads

Pottsville, Pa.—Acting at the direction of the Schuylkill court, which has begun a vigorous campaign against all officials who are negligent in connection with roadmaking, the Grand Jury has indicted the members of St. Clair Council for failing to report bad road conditions near the St. Clair mining operations. The Mt. Carbon Borough Council was also ordered indicted by the court.

SEWERAGE AND SANITATION**Study Drainage from a Pullman Car**

Atlantic City, N. J.—A delegation of seventeen city officials have just returned from several Southern cities, traveling in a special Pullman car, for the purpose of studying at first hand problems of drainage similar to those which will soon have to be dealt with in Atlantic City. Atlantic City is only 4 feet above high tide, and it has been proposed to drain it by means of an open canal with branches. New Orleans, where similar problems have been dealt with, was one of the principal cities visited. Pensacola, Fla.; Birmingham, Ala.; Nashville, Tenn., and Louisville, Ky., were the other cities visited.

Typhoid in Council Bluffs

Council Bluffs, Ia.—An exhaustive report on the typhoid situation has been made by City Health Officer Charles H. Bower to the Board of Health. His report tended to confirm statements already made that the infection was caused by impurities in the city water. In his report Dr. Bower stated that on March 1 there were fifty cases of typhoid in the city. These patients were found in all parts of the city, and forty-one of them were using city water. Six of the forty-one were from Omaha and one was from out of the city, leaving at the lowest estimate more than two-thirds of the patients users of city water. Reports of the analysis of State Chemist C. M. Kinney again affirmed that the water was impure; that it contained sewage, animal life, algae and other substances, and that, in the judgment of the chemist, the water was unfit for use. A letter giving the results of the bacteriological analysis made by Henry Albert, State bacteriologist, was read. It follows: "Have made a bacteriological examination of the sample of river water received from you and, although we do not find any typhoid bacilli, yet we find colon bacilli, which is evidence of contamination with sewage bacteria. The presence of such means, of course, the possibility of typhoid bacilli gaining entrance. Such, however, is nothing more than can be expected from the ordinary river water. There is not a river in the State but that presents pollution of this kind. I presume however that the city of Council Bluffs has protected itself by adopting some means of purifying the river water before it is used. If such is not done, the development of a considerable number of typhoid cases can only be expected."

Thousands of Cases of Typhoid in Minneapolis

Minneapolis, Minn.—Thirty-four deaths from typhoid fever were reported in Minneapolis in February. The Health Department conservatively approximates the number of typhoid fever cases as 600. Estimates of physicians and the heads of charitable organizations variously place the number at from 1,500 to 3,000. The hospitals are full of fever patients, and one public school has been converted into an emergency typhoid station. There is no question about the source of the disease—Mississippi River water polluted by sewage from Brainerd, St. Cloud and Anoka, small cities higher up the river, where typhoid has been prevalent. Physicians without exception advise against the use of city water for any purpose whatever. It has been turned off from the city schools. The pool at the University of Minnesota has been drained, and notices have been posted warning students against use of the city water and anything that may have city water in it. Through the suggestion of the State Board of Health an emergency remedy has been adopted. From one-quarter to three-quarters of a grain of hypochloride of calcium is put in every gallon of water drawn from the river at the pumping stations. H. A. Whittaker, chemist of the State Board of Health, and Dr. H. W. Hill, State bacteriologist, have examined water so treated and pronounce it free from sewage bacteria.

Test of Sewer System

Winchester, Va.—The work of testing the new sanitary sewer system and disposal plant for the city was completed last week, and it is expected the system will be in use by the first of April.

WATER SUPPLY

To Collect Data Regarding Purity of Ohio River Water

Cincinnati, O.—With a view to the collection of data regarding the effect which the Fernbank dam will have on Cincinnati's water supply, Service Director J. H. Sundmaker has purchased a motor boat and appointed E. F. Bahlman, chemist, to take and analyze samples of water at various points along the river before and after the opening of the dam. Besides examining Ohio River water he will analyze the water coming in from Ohio's tributaries, especially the Little and Big Miami and the Scioto, which passes through Columbus. By beginning this work early and continuing it throughout the summer and fall, before and after the dam is put in service ample data will be available to guide future action. If purification should be necessary, the application of electrolyzed salt solutions will be considered.

Bleaching Powder Gives Good Results in Omaha

Omaha, Neb.—The city water supplies are being treated with bleaching powder, under the direction of Dr. John L. Leal. While an official report has not yet been made the fact has developed that in 1907 deaths from typhoid fever numbered 87, mostly at the same season that similar infection has been working this year. So far the epidemic of 1910 has been credited with only 27 victims. The water is now in as good condition, if not better, than at the date in December when the colon bacilli began to be very noticeable in the water tests of the city bacteriologist. From showings of more than 2,000 bacteria, the tests show the number to have fallen to something slightly over 100 in most samples and in no case over 200.

Fine Showing Made by City Water Works

Pueblo, Col.—The South Side Water Works, District No. 2, were conducted at a profit of \$25,913.04 during the past year according to the annual report just issued by Commissioners H. Z. Price, Andrew Park and W. G. Fraser. The total receipts were \$124,699.14, of which \$78,181.42 was from water licenses and \$17,552 from meters and contracts. The profit on taps added \$25,481.23 to the income. The biggest expenditure was the payment of \$53,353.33 interest on bonds. The total expense was \$98,786.40. The cash on hand at the beginning of the year was \$10,475.87 which shows a substantial improvement, the amount for the previous year on hand being \$2,289.58. Total bonded indebtedness of the plant is now \$944,353.89 after deducting \$84,646.11 which is in the sinking fund available for payment of this debt. Most of the sinking fund is in interest-bearing bonds on which a profit of \$3,133.62 was realized during the year. The plant of the South Side is valued at \$1,000,000.

Investigation of Water Pollution

Rocklin, Cal.—Water used for drinking purposes by residents of Rocklin, Loomis, Penryn and Newcastle has been ordered boiled by Secretary Snow of the State Board of Health, to prevent a threatened typhoid epidemic. It is stated that workmen along the Southern Pacific Railroad line have contaminated the watershed and as a result the epidemic threatens, and the State Board has delegated a committee composed of Drs. J. H. Parkinson and W. F. Snow to investigate the charge.

Big Pumps at Water Works Overhauled

Sacramento, Cal.—The 10,000,000-gallon Snow pump at the city water works has been started up after a lay-off for several weeks while it was being given a general overhauling. The pump is now in fine condition, and good for long service. The Allis pump was given an overhauling before the Snow pump was put in trim, following an inspection by City Engineer George N. Randle.

First Year Yields City Profits

Sheboygan, Wis.—The annual report submitted by the Sheboygan Water Commission, for the first year under municipal ownership, shows a net profit of \$47,258.43. The profit comes after deducting the operating expenses and paying \$14,400 interest on the \$360,000 of bonds with which the plant was purchased.

Jersey City Wins Its Water Fight

Jersey City, N. J.—The Court of Errors and Appeals has sustained Jersey City's contention that the Jersey City Water Supply Company, which built the city's water works at Boonton, must deduct from the purchase price of the works, when the city acquires them, the cost of intersecting sewers to prevent contamination of the Rockaway River, or that the company should at its own expense prevent such contamination. The decision is of the greatest importance to Jersey City, and, it is claimed, will effect a saving of over a million dollars to Jersey City in the purchase of the water works at Boonton. According to the decision, it is up to the Jersey City Water Supply Company to prevent the pollution of the Rockaway River by Boonton, Dover, Hibernia and other towns that have used the Jersey City watershed as a natural drain. When news of the decision reached the City Hall there was general jubilation. J. William Griffin, Superintendent of Supply and Distribution, said: "This decision is a complete victory for Jersey City in every detail. It means the building of sewers and disposal works at a cost of \$500,000; it means a reduction of \$500,000 from the purchase price on account of the Morris Canal rights; it means a further reduction of \$72,500 liquidated damages on account of not having the plant completed on time; it means a further reduction of \$18,500 on account of not having the invert of the tunnel according to specifications. Altogether, it is a victory to Jersey City involving a saving of over a million dollars."

Map of City Water Mains

Oklahoma City, Okla.—Maps are being prepared in the offices of the city Water Department showing the location of all water mains in the city and also designating what property has water connections. This is the first map of the kind that has ever been made and will prove of benefit to the employees of the department. The map is being made in sections and blueprints will later be prepared and the sheets put in book form which will make a handy reference in case of leaks or accidents.

Train of Pipe En Route to Sacramento

Sacramento, Cal.—A trainload of eleven cars of cast-iron pipe to be laid for water mains in the southern part of the city, is on its way from Birmingham, Ala., to Sacramento. The shipping bills for the pipe have been received at the office of City Engineer George N. Randle. A total of 16,000 feet of pipe has been ordered. The city originally intended to buy but 8,000 feet of pipe this year, but such a favorable bid was received—\$33.90 a ton delivered—that the City Trustees doubled the order. The new pipe will be the means of supplying water to many places in the southern part of the city not now reached by the mains.

STREET LIGHTING AND POWER

Power Development Along Los Angeles Aqueduct

Los Angeles, Cal.—According to a report of the Board of Consulting Engineers, the Los Angeles aqueduct will develop 120,000 horse-power, instead of 90,000 as has been heretofore believed. The capital cost for developing is estimated at \$60 per horse-power, although the cost to private companies in the same field has hitherto been from \$150 to \$200. Another advantage which the city's plants will have over private power companies is that steam auxiliary power may be dispensed with because of the reservoirs in connection with each of the plants and the fact that there will be seven plants. The average distance of plants from the city is 65 miles.

Last of Lamp Posts Removed from Street

Fort Smith, Ark.—An old landmark of Garrison avenue was removed last week when a force of Fort Smith Light and Traction Company's employees removed the lamp post on the corner of North Seventh and Garrison avenue. This lamp post was not only the only one on the streets, but was the last one in the city. No one seems to know why it was overlooked when electricity supplanted artificial gas as the illuminant for the streets. The lamp post had stood on the corner for more than thirty years, but now will go into the junk pile.

All Wires Ordered Under Ground

Mishawaka, Ind.—All wires in the business district of Mishawaka will have to be placed underground within the next six months, this having been decided upon by Mayor John A. Herzog and the members of his Council. This question was taken up by the Council of the last administration, but it was dropped because of the large expense, and it is now intended to start with the business center. The proposed ordinance will affect all telegraph, telephone and electric light companies, and call for the wiring of all buildings from the rear. Poles will be permitted in the alleys and out-of-way-places, but none will be allowed upon the main streets. Conduits will be laid in the alleys and the wires will then be distributed from poles. One conduit with apartments for the various wires will be laid, decreasing the cost to all those who will be affected by the ordinance. The street car company has signified its willingness to replace the present wooden poles with iron ones, similar to those used upon the Main street bridge.

Gas Plant Now Earning Money

Hamilton, O.—Since the introduction of natural gas Hamilton's gas department, which formerly lost \$700 a month, is on a paying basis. It earned \$516 net in February. All Hamilton's municipal utilities are now on a paying basis. The electric plant earned \$521 and the water works \$578 in February.

Mayor After Electric Light Company

Willimantic, Conn.—Mayor Dunn has called the attention of the Board of Aldermen to the fact that the Willimantic-Rockville Electric Light Company, without permission, has set poles along Pleasant street in violation of its privileges, and has also erected a high-tension electric wire over and above the footbridge, which is very dangerous in its present condition. The high-tension wire brings fluid from the Uncas Power Company's dam at Scotland station, the local company having bargained for the electricity instead of continuing its manufacture or generation at the local plant. This high-tension current enters a new transformer house at the local plant and is reduced to a voltage suitable for street and indoor needs.

Big Leakage in Municipal Gas System

Wheeling, W. Va.—William A. Baehr, the city's consulting engineer on gas works improvements, has submitted a report to Council in which he recommends the installation of a water gas plant instead of a coal plant. The water gas plant, he says, works almost automatically, and can be installed for the sum available. A feature of the report was what is termed "leakage," by which is meant gas used and not accounted for. According to the data he has collected since he was employed a few months ago, there was one month when this leakage amounted to 53 per cent of all the gas manufactured at the plant. The average leakage per month was 34 to 50 per cent. It is proposed to tear out the upper retort house and build in its place a generator house containing two water gas machines. This will be the only radical change made at the plant, all other work being in the nature of repairs. Mr. Baehr said it would be a fearful mistake for the city to do away with its gas plant, and was positive that if improvements are made along the lines suggested by his plans the plant will become a revenue producer for the city.

Municipal Plant Talk to Reduce Rates

Wilmington, Del.—Numerous complaints are being made as to the high cost of gas and electric current and the construction of a municipal lighting plant is being discussed, particularly since the Water Commissioners have taken up the probability of harnessing the flow of water from the new reservoir at the Weldin farm, to this city to generate electricity. James L. Banning, President of Council and Benjamin L. Shaw, President of the Water Commission, have discussed the matter with Mayor J. Harvey Spruance, and it is proposed to provide data on the subject as the time approaches. The agitation begun by these officials is intended as a feeler of public sentiment in the matter, and in the event of a move being started in the direction intended the matter will be taken up formally, and some action decided upon.

FIRE AND POLICE**Clubs Restored to Policemen**

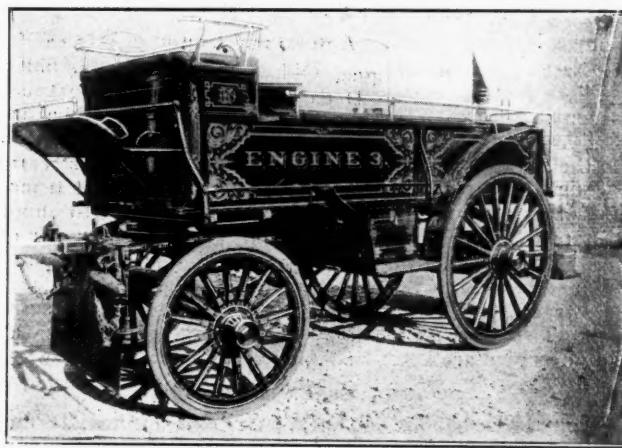
Bridgeport, Conn.—As a consequence of the murder of a policeman the Police Board issued an order directing all policemen on day duty to carry clubs. Patrolmen have been instructed to use special vigilance in detecting the carrying of concealed weapons. A shooting gallery and regular pistol practice will be installed. Proficiency in the use of pistols may be made a requirement of candidates for the force.

Chicago to Have Italian Police Bureau

Chicago, Ill.—Chief of Police Steward has formed a plan for a special force of Italian police, who are to be employed as detectives in "Black Hand" and similar cases which have hitherto proved impossible of solution by the regular police. Twenty-five men will be examined in the Italian language and Sicilian dialect, and all who pass the tests will be employed. Civil Service requirements have been modified so as not to exclude suitable men who may lack regulation height and weight or be unable to pass the American educational test.

Old Hose Wagon Rebuilt Up to Date

Lynn, Mass.—An old one-horse hose wagon, broken in a collision, has been rebuilt by O. K. Kress, Lawrence, Mass., so that it is now a thoroughly up-to-date hose wagon and has been put in service at the Federal street engine house. On the old-style wagons there was no room for the men to dress while going to fires, except on the top



Courtesy Lynn Item

A SAFE HOSE WAGON

of the wagon, and there was room for but two men on the footboard. When it was necessary to carry three or more men to a fire, their lives were endangered. The new wagon weighs 2,640 pounds, being about 300 pounds heavier than any other hose wagon now used in the department. It will carry 1,200 feet of hose and ten men can ride in it, comfortably seated. The wagon is also equipped with two small chemicals, axes, bars, etc. The hose is stretched along the length of the wagon in two compartments, with a space about two feet wide in the center of the body of the wagon, so that the men can walk up to the seats, which are on top of the hose compartments. The wheels are equipped with heavy rubber tires and the new hub band brake. The wagon is beautifully decorated and a credit to the department.

New Police Rules and Regulations Adopted.

Elizabeth, N. J.—The Police Committee of City Council has adopted a new set of rules and regulations. They provide that a candidate for the force shall become thoroughly acquainted with the duties of a police officer—what constitutes crime, the different kinds of criminal offenses, when and when not to make an arrest. The action of the committee is in conformity with the recommendations made by Mayor Mravlag in his last message to the City Council. A Bureau of Identification will be established, in charge of a special clerk. Another feature of the new rules is the roll of honor. It provides that a record shall be kept of all the officers who perform heroic acts or display unusual courage or judgment.

MOTOR FIRE APPARATUS

Superiority Over Horse-drawn Shown at Kansas City, Kan.—High Speed at Tacoma—Cities Purchasing

Kansas City, Kan.—The advantages of motor cars over horses, in certain branches of the fire department, was demonstrated when a motor car containing four men ran $2\frac{1}{2}$ miles to a fire and arrived there ahead of horse-drawn vehicle which had only six blocks to go and started at the same time. Kansas City Kan., is going to buy a motor car in which the chief and assistant chief of the fire department will ride to fires. A 50-horsepower Speedwell, which was being exhibited to the city officials by P. D. Karshner, a motor car dealer of this city, stood in front of the Kansas City, Kan., Fire Headquarters. The exhibition was abruptly ended by the ringing of the big electric gong on the wall in the fire station. The firemen deserted the motor car and ran to their wagons. Larkin Norman, the chief, and Olander Lind, assistant chief, jumped into their buggies and started for Tenth street and Pacific avenue, the place of the fire. After they had driven away from headquarters on a gallop, Mr. Karshner invited several of the city officials to get into the motor car and go to the fire with him. The motor car passed Chief Norman and Lind before they were four blocks away from the station, and arrived at Tenth street and Pacific avenue nearly a minute before No. 4 Hose Company, which had to run only from Seventh street, a distance of about six blocks.

Auto Hose Wagon Makes High Speed

Muskogee, Okla.—The new automobile hose wagon of the Fire Department has arrived. It is a 70-horsepower Thomas, capable of a speed of 50 miles an hour. It carries 1,000 feet of hose and a 40-gallon chemical tank. J. J. Edmonds, a factory expert, is here instructing the Muskogee firemen in its use. The new aerial truck is due to arrive shortly. The truck is guaranteed to shoot a ladder 75 feet into the air in 15 seconds. The ladder is raised and lowered by compressed air. The truck is so constructed that it may be used as a water tower as well. The Chief's new auto, when tested the other day, made a speed of 55 miles an hour. The Department now consists of three steamers, a hook and ladder, three hose wagons, two chemicals, an auto hose wagon, a Chief's buggy, a Chief's auto and an aerial truck. Two new fire stations in addition to the three already occupied are being built and will be finished soon.

New Auto Engine at Tacoma

Tacoma, Wash.—Tacoma's first piece of automobile fire-fighting apparatus has arrived in the city. It is the long-delayed automobile chemical engine, which should have been delivered last October. It was manufactured by the Seagrave Company of Columbus, O., and is a modern piece of equipment. Several other pieces of motor-propelled apparatus will be delivered within a few weeks.

Yonkers May Now Buy Motor Engine

Yonkers, N. Y.—Council has unanimously passed an ordinance providing for the purchase of a motor fire engine in accordance with the views of Mayor James T. Lennon, who vetoed a previous measure on the ground that partiality had been shown one manufacturer, whose machine had been specifically mentioned. The ordinance calls for a machine with a minimum speed of 60 miles and a maximum of 70 miles per hour.

Street Alarms for Fire Installed

Paterson, N. J.—A crew of men working under the direction of James Zeluff, superintendent of the fire alarm system, has been at work installing fire alarm gongs at seven street corners where there is a congestion of traffic. The gongs are a part of the regular fire alarm system, and are designed to give the traffic officers warning in case of a fire, that they may clear the streets for the approach of the apparatus.

Manchester Will Reorganize Fire Department

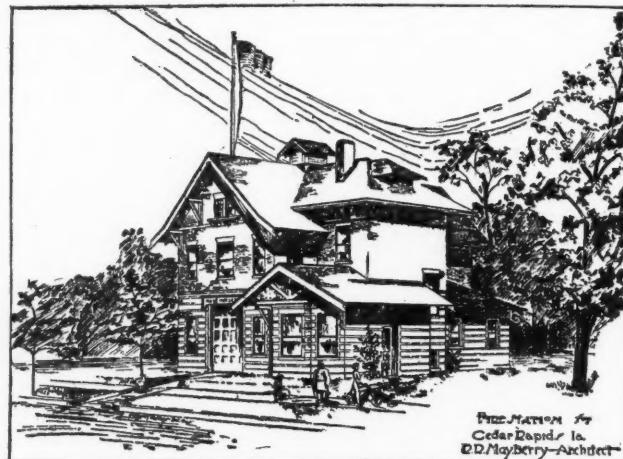
Manchester, N. H.—The city will practically reorganize its fire service April 1; 37 call men will be retired and 15 permanent men added to the department. A flying squadron will be one of the new features. All captains have been transferred under the new rules.

Favors Direct Purchase of Hose

Poughkeepsie, N. Y.—Mayor John K. Sague has sent to the Poughkeepsie Common Council a message of disapproval of the purchase of 500 feet of Victor hose for the Fire Department. The Mayor says the city has good satisfactory hose in use now, and should adopt one of two policies: Either buy more of the same kind or else give new brands a thorough trial before purchase. The Mayor believes also that the policy of giving local merchants the preference in the purchase of such an article as fire hose which none of them keep in stock is wrong, and merely makes the city pay an extra commission, and subjects the members of the Council to extra pressure. In purchasing hose the city should deal directly with the manufacturers.

Attractive Fire Station and Grounds

Cedar Rapids, Ia.—The new house for Hose Company No. 5 has been finished and occupied. The building has a pleasing appearance owing to the wide overhanging cornice and gabled roof. The building stands on a high plot of ground an acre in extent on the west side of Riverside Park,

**MODEL HOSE HOUSE AT CEDAR RAPIDS**

and is surrounded by lofty trees that shade practically the entire grounds. The lounging room is on the ground floor. The apparatus room and stalls are paved with creosoted blocks. On the second floor is located the sleeping room, captain's office, bath room, toilet room, linen closet and feed room.

Madison Raises Salaries

Madison, Wis.—The Council has raised the salaries of policemen and firemen on a sliding scale as follows: Chiefs from \$105 to \$115 a month, Assistant Chief and Captain of police from \$85 to \$95, detective from \$75 to \$85, Captains in the Fire Department from \$80 to \$85, Electrician of the Fire Department from \$75 to \$80, firemen and patrolmen \$65 the first year and \$75 thereafter. Under the old schedule the men received \$60 the first year, \$65 the second and third years, and \$70 thereafter.

Prize Police Precinct of Washington

Washington, D. C.—Commissioner John A. Johnston, who has supervision over the Police Department, addressed the Fifth Precinct policemen last week, the occasion being the presentation of the John B. Wight flag, which was won by the men commanded by Capt. George E. Williams. Major Richard Sylvester was chairman of the committee on inspection. In his letter to the captains of the eleven precincts Major Sylvester informed them that the flag had been awarded to No. 5 because of the following:

1. Best presentation of a section of officers and men prepared for duty.
2. The cleanest station house, aside from the construction of the building.
3. The best ventilated cell corridor.
4. The best condition of dormitories and linen.
5. The best display of snap, promptness and reliable responses to interrogatories propounded concerning the manual and the police regulations.
6. The best all-round officer-like appearance of officers and men.

GOVERNMENT AND FINANCE

Commission Without Restrictions Rejected

Grand Forks, N. D.—Imperfections in the present municipal commission law were blamed for the defeat of the movement in a special election, the vote being 506 against and 459 for the plan. Grand Forks is the second North Dakota city to vote on the plan that rejected it. Some time ago Fargo turned it down. Mandan, Bismarck and Minot adopted it, and Valley City and Dickinson will vote on it within a short time. Under the present law, such features as the recall, initiative and referendum and a few others are lacking, and this was the reason the voters of Grand Forks rejected it.

Three Kansas Cities in Favor of Commission

Iola, Kan.—The commission form of government carried every ward in Iola. Out of 927 votes cast, the proposition received 570 votes, or a majority of 213. The total vote cast was less than half the registration. Many men and women who admitted that they were not satisfied with the old Council system could not be induced to go to the polls for the reason that they regarded the commission plan as an experiment as yet. This was especially true of the women. Only a small portion of them turned out. The laboring men employed in the factories and cement plant voted almost solidly for the commission plan.

Newton, Kan.—By a vote of 574 to 262 this city adopted the commission government, the issue carrying in all four wards. With 2,600 votes, but 1,299 were registered, and not quite two-thirds of these exercised the right of suffrage. General satisfaction with present officials caused the slump, and new officials will probably be selected from those now in office to serve for four years.

Wellington, Kan.—Commission form of government was adopted at an election here by a majority of 435 votes. But 46 people voted against the proposed change in ruling. About a dozen women voted.

A Commission Charter Lost

Sapulpa, Okla.—The charter providing for the commission form of government was defeated by a majority of 41. A clause in it providing for the payment of 3 per cent of the gross earnings by the franchise grantees and the clause providing for the enforcement of the liquor law are accredited with its defeat. It was framed by a board of ten Freeholders. It is said that another charter will be drafted at once.

New Rule Lost in South Dakota Town

Spearfish, S. D.—Spearfish rejected the commission form of government by a majority of 26 in a total vote of 220.

Semi-Commission in Seattle

Seattle, Wash.—Complete election returns give Hiram C. Gill 3,687 plurality for Mayor over William Hickman Moore and shows the adoption of a charter amendment providing for a non-partisan primary and non-partisan ballot. This amendment was favored by all the improvement clubs and reform organizations and was vigorously opposed by Mayor-elect Gill. The new plan gives Seattle a semi-commission form of government. Names will be placed on the ballots upon the filing of a petition signed by 25 voters. A primary will be held two weeks before the general election, and the two highest candidates at the primary will have their names on the final ticket. The present system of Ward Councilmen was abolished. Seattle will no longer have 18 Ward Councilmen and 4 at-large. In 1911 the election will be held to elect 9 Councilmen-at-large, who will succeed the present 22 men. Each year 3 new Councilmen will be elected and 3 will retire.

Pittsburg Employees Get Raise in Salary

Pittsburg, Pa.—Every employee of the city of Pittsburg will get a raise in salary. From the scrub women in the municipal buildings and pages in the City Councils to the departmental heads and chief clerks, the change in salary ranges. The increase will add about \$400,000 to the city's pay roll. Scrub women are advanced 25 cents a day, pages from \$10 to \$15 a month. Some stenographers and clerks get as much as \$500 increase.

Employment of City Labor

Minneapolis, Minn.—Council has passed and Mayor J. C. Haynes has signed an ordinance providing that hereafter the "ticket method," so called, for the employment of labor in the City Engineer's and Water Works departments shall be discontinued, and common labor shall be employed direct by the officers at the head of these departments. In hiring such labor, particular regard must be had to an equitable distribution of employment from the citizens and residents of the several wards of the city. The City Engineer and Supervisor of the Water Works must also keep a book, which shall contain the names of all persons recommended for such employment, and the foremen of the various crews engaged in city work have no authority to hire any such labor except in case of emergency, and then only upon instruction from the City Engineer or Supervisor of Water Works.

Vice Commission at Indianapolis

Indianapolis, Ind.—Mayor Lewis Shank has appointed a vice commission of thirty citizens, representing the clergy, business and professional men of the city, and hopes to bring about reforms and safeguard the interests of the city

New City in Rhode Island

Cranston, R. I.—The bill giving Cranston a city charter has passed the Assembly. It will be the ninetieth city in New England in age, but the forty-first in size according to the last available census figures. If its population is 22,000, as claimed, it will be the thirty-sixth. No new city has been incorporated in Rhode Island in fifteen years.

STREET CLEANING AND REFUSE DISPOSAL

Civic Instruction to Follow Clean-Up

Alexandria, Va.—Plans for a campaign of general spring cleaning up throughout the city, April 15, have been inaugurated. The School Board will be asked to give the public school children a holiday, in order that they may participate in the movement, and arrangements were also made for a public meeting which will be held in the Young People's Building in the evening, at which time a number of prominent speakers on civic improvement work will make addresses. It was also decided, following its annual custom, to give prizes to school children for the best kept yards in the city. The prizes will range from \$10 to \$1 each.

Sweeping Ordinance

Columbus, Ind.—An ordinance has been passed making it unlawful for any person, firm or corporation to sweep dust, dirt, refuse or any accumulations from any building or from any premises to any sidewalk, gutter, street or alley. Instead, the sweeping must be done to the rear and the sweepings then gathered up, placed in a receptacle and left for the garbage collectors to remove. The local Board of Health fathered the ordinance and it was aimed at business houses where clerks were in the habit of sweeping into the public streets.

New Garbage Regulations

New Britain, Conn.—The Board of Health, as instructed by Council, has recommended that the ordinances relative to garbage be amended. One provides that the garbage shall be separated from ashes in galvanized iron cans having water-tight covers which shall be kept on the cans at all times and the garbage so deposited shall be removed under the direction of the Health Board in cans having water-tight covers. Another provides that no person shall be a collector or carrier of garbage without first having obtained a permit from the Health Board and no person shall collect or carry garbage through the streets of the city except in cans having water-tight receptacles, which shall be numbered or marked as the Health Board shall designate, and any one who has received a permit to collect or carry garbage through streets and fails or neglects to collect the same without first giving the Health Officer three days' notice of his intention to do so shall be published by having his license revoked.

Police to Insist on a Cleaner City

Fort Wayne, Ind.—To promote a safer, better, prettier and more sanitary city, Chief of Police Benjamin H. Elliott has issued a general order to the Police Department instructing all officers to enforce the city ordinance forbidding the throwing of glass, paper, nails or other refuse matter on the streets or alleys of Fort Wayne under penalty of a fine of \$5. The ordinance was passed in 1895 and was enforced for several years, but of late has been almost totally ignored. Some of the big office buildings are the worst offenders, waste paper, empty ink bottles, and sometimes worn-out ledgers being heaved out of the windows into alleys and in some cases directly into the streets. The same ordinance also forbids the accumulation of heaps of ashes in the alleys, and the burning of waste matter of all kinds, specifying that all such stuff be placed in proper receptacles for the garbage collectors.

No Ashes or Refuse on Lots

Portland, Ore.—Assistant City Solicitor Geoffrey Goldsmith prepared an ordinance for Councilman James P. Kelly, of the Fourth Ward, which will prohibit the use of vacant lots within the city limits for the dumping of garbage and other refuse; also the burning over of such lots or the dumping of ashes.

For Garbage Engineer

Milwaukee, Wis.—The new garbage incinerator will be in charge of an expert engineer, appointed by Dr. G. A. Bading, Commissioner of Health, subject to rules of the Service Commission. The salary will be \$2,000 a year. Dr. Bading and John Primrose, chief engineer of the Power Specialty Company, the firm which is erecting the plant, appeared before the committee on health and urged the passage of the ordinance.

Improve Mishawaka, Says Mayor

Mishawaka, Ind.—Mayor John A. Herzog favors a "clean-up day," when everyone should clean up their yards and parks and plant some shrub or flower. He said that river banks in Mishawaka are the most neglected and said that the people should clean them up, remove all debris and plant trees and all of the more hardy of flowers. Attention should be given to lawns and streets, and soon Mishawaka will be known not only as the "city of light and power," but as the "city beautiful." He wants the newspapers to take up the fight and wage an earnest campaign. He wants also more street lights. The lighting system of the Cedar street bridge is now being improved.

New Sweeper in Trenton

Trenton, N. J.—Street Commissioner William F. Burk has tried out the new Campbell power broom. The new sweeper was ordered some time ago by the Street Committee of Common Council, but owing to the unsettled business conditions existing in Philadelphia, due to the carmen's strike, it was not shipped until last week. Upon its arrival by boat via the Delaware River it was immediately placed in service. The broom is 8-foot tread and is horse-drawn. Commissioner Burk inspected some of the first cleaning done with it and expressed his satisfaction.

Uncle Sam Must Clean Snow

Washington, D. C.—A snow and ice law has been written by the District Commissioners and sent to the Capitol. It provides that everyone must clean his walk of snow and ice, or be fined \$5 or go to the workhouse for five days. In addition, the District will clean the delinquent's walk and charge it up to him as a real estate tax. It provides that every tenant within the fire limits must clean off his sidewalk within the first four hours of daylight after the snow or ice forms. The District of Columbia is made responsible for its crossing and sidewalks in front of municipal buildings, and the United States is made responsible for the walks in front of government buildings and foreign embassies and legations. In the case of vacant lots or unoccupied buildings, the owner is made responsible. Superintendents and janitors are made responsible for the walks in front of office buildings, hotels, apartment houses, etc. Previous measures on this subject have been declared invalid because of discriminations between various classes of property owners and because there was no provision for cleaning walks in front of public buildings. The proposed bill seems to except no one.

RAPID TRANSIT**Boston to Have Subway Along Charles River**

Boston, Mass.—The Boston Elevated Railway Company has notified the Boston Transit Commission that it consents to the construction of the proposed Riverbank subway. This consent, or an order from the Railroad Commission, on appeal, was necessary under the law before the Transit Commission could proceed to build, and the granting of it completes the legal requirements. According to the act and the Commission's decision, the route of this new subway, from the Park street station, will be under Boston Common and Beacon street, Joy street and Walnut street, thence turning under Chestnut street, which it follows to the embankment, reaching the surface in the vicinity of Charlesgate East. That is the route which the Transit Commission expects to follow, and for which it is now making detailed plans to submit to the contractors. Bids on the work will be called for as soon as such plans are completed. The estimated cost is a little under \$4,000,000. It may be possible to combine in some way this subway with the Beacon Hill tunnel, which is the Boston end of the Cambridge tunnel. Both touch the same point under Beacon street and run on parallel lines under the Common, and it is said that there would be a saving in expenses if both were built at the same time under the Common. There may be one large tunnel, instead of two smaller ones.

Pure Air in Street Cars

Chicago, Ill.—The following provision regarding the purity of air in street cars are required by the terms of a new ordinance:

There shall be introduced into every car 350 cubic feet of air every hour for each passenger.

The minimum amount of air to be introduced into a loaded surface or elevated coach shall be 28,000 cubic feet each hour.

There shall be at no time in excess of one-tenth of 1 per cent of carbon dioxide gas in the atmosphere which passengers have to breathe.

The air shall be conducted into the car through the floor.

Exhausted air shall be conducted out of the car through overhead ventilators, but no air shall be allowed to enter by that route.

During cold weather the air which is admitted shall pass over heating coils and be warmed as it comes in.

In any car or part of a car where smoking is permitted the supply of air shall be at least one-third greater.

Spittoons must be provided for smokers, and they must be of a kind easily cleaned and not easily overturned.

Railroad Absolved from Blocking Street

Sheboygan, Wis.—After being out about two hours, the jury in the case of the city against the Sheboygan Light, Power and Railway Company, charged with having broken a city ordinance by obstructing the street with the car during the winter, brought in a verdict of not guilty.

Engineer Reports on Trenton Car Service

Trenton, N. J.—The report of Samuel Whinery, Consulting Engineer, who was engaged to report on present conditions and suggest improvement in the car service, has been made to Charles E. Bird, City Counsel. The report contains statistical and tabular statements of data collected in regard to the physical condition and operation of the Trenton system as compared with that of other cities of about the same size. The comparison is not very unfavorable to Trenton, although the need of improvement is pointed out. The inadequate size of the cars is the most serious defect in the equipment. The report recommends that a larger number of cars be put in service during rush hours. Movable "mats" are recommended to improve the sanitary condition of the cars. The city should enforce strictly the provisions of the traffic ordinance relating to the obstruction of car tracks by vehicles. An increase in the capacity of the power plant is greatly needed, both in the matter of boilers and generators. The overhead wiring needs overhauling. Railway tracks need overhauling, and in some cases heavier rails, preferably T-rails, should be used. Large cars should be substituted for small ones. In conclusion, Mr. Whinery states that the volume of street travel in Trenton is abnormally small, and he makes the prediction that when the improvements he recommends have been made there will be a material increase in street car travel, which will warrant still further enlargement of power plant and equipment.

MISCELLANEOUS**Loose Leaf Ledger for City Lots**

Anniston, Ala.—City Engineer Henry Clay Allen has applied for a patent on a novel idea for the insertion of loose leaves in a block book, the first application of the idea to be made in a book of Anniston, now under preparation. Every lot in the city, its size, owner and location, is given in the book from 1905. This date is found on the page opposite to the lot at which the book is opened, and by means of the loose-leaf device, the book is made virtually perpetual, as later dates can be inserted on additional leaves. The State Tax Commissioners have highly praised Mr. Allen's idea and have complimented him for his excellency in the preparation of the work. He says that he will have the work completed in about eight months.

Altoona to Have Park Commission

Altoona, Pa.—Early in the new Councilmanic year an ordinance will be introduced and passed, creating a Park Commission for Altoona. Mayor S. N. Hoyer has communicated with the authorities of Johnstown, Reading, York and New Castle, where they have Park Commissions, and has secured copies of their ordinances, and legislation will be prepared by the City Solicitor embodying the best features. It is likely that in creating a Park Commission a new department will be added to the municipal government, so that the commission will have full authority to draw warrants and expend such money as may be provided for park purposes. Park commissioners usually serve without compensation, and it is not likely that any salary will be attached to the office as it will be created in this city. The authority to appoint the Park Commissioners will doubtless be conferred upon the Mayor, his selection being subject to confirmation by Select Council, as with all other executive appointments. There will be work for a Park Commission at once when the body is created, for the city now has a park and money for its improvement will be provided by Councils in the appropriation ordinance.

Traffic Ordinances Must be Enforced

Charleston, W. Va.—The different ordinances for the control of traffic must be obeyed and the Police Department has been ordered to strictly enforce them all. Heretofore they have been lenient. The corner men are having their hands full, especially with the owners of automobiles, who insist on letting their machines stand in the different streets where they should not and with those who leave vehicles standing along the streets.

Mayor Thinks Mile Square Should Use Hard Coal

Indianapolis, Ind.—The question of dense black smoke from belching stacks within the mile square of the city is to have immediate consideration from Mayor Shank. Within a short time the Mayor expects to have an ordinance introduced in the city council prohibiting the use, within the mile square, of coal that produces dense black smoke. The Mayor believes the use of anthracite coal should be required and he expects to obtain advice as to whether a measure requiring it would be valid. He is also considering the advisability of introducing an ordinance prohibiting the use of stoves in the mile square, both as a means of relieving the smoke situation and for reducing the danger from fires. It is probable the Mayor will take up with the County Commissioners the question of a violation of the smoke ordinance at the county power house, near the jail. These stacks are visible from police headquarters, and the Mayor believes the County, as well as others, should be obliged to do its share toward eliminating smoke.

To Save Money on Coal Purchases

New Haven, Conn.—It was decided at a session of Mayor Rice's cabinet that the coal supply for all city departments for the entire year should be purchased in one contract and the most favorable time of year, when the price is lowest in the spring, should be selected to purchase. It is expected that this method of buying will save the city between \$4,000 and \$5,000 a year. The department heads will get together to work out the details.

Municipal Printing Plant Proposed

Minneapolis, Minn.—Minneapolis may start a municipal printing plant. The first step in this direction was taken by the City Council when it directed its printing committee to investigate the advisability of such a project. Heads of the several city departments make the charge that they are inconvenienced greatly from time to time because printers appear not to give city business the same attention that private work is getting. Also, the Council is constantly having trouble over the awarding of printing contracts, the competing printing firms furnishing the trouble. Alderman Williams, chairman of the printing committee, who is a practical printer, estimates that the City Council, the Park and School Boards spend at least \$25,000 a year for printing and that in a public plant in the hands of an experienced man the city could do the work at least as cheaply, more promptly, and with better satisfaction all around. The School Board has been operating a small printing plant for its own needs for some years and it has proved satisfactory and economical.

Suggestions for the Development of Reading

Reading, Pa.—A report on the replanning of Reading, as an industrial city of 100,000 inhabitants, includes the following recommendations:

To adopt a more thoughtful and up-to-date method of locating and improving streets.

To remove from the main streets all wires, poles and other obstructions.

To take prompt and vigorous steps for the abatement of the smoke nuisance.

To extend the city limits by annexation, to include all the territory within the proposed Belt boulevard.

To add to the convenience, comfort and beauty of Penn square by the construction of a central Mall or narrow park strip.

To proceed at once to make the best possible grouping of public and semi-public buildings.

To lay out a comprehensive system of thoroughfares and boulevards, including diagonal avenues and a Belt boulevard to encircle the city.

To provide for the gradual abolition of all grade crossings within the city limits.

To build across the Schuylkill River a series of bridges of a more appropriate type.

To secure at once for playground purposes as many open spaces as possible, especially in the settled sections of the city.

To get possession of the finest natural features around Reading—its mountain tops, valleys, river banks and creeks—and set them aside as public parks.

To investigate and report upon the improvement of housing conditions in Reading.

Mayor of Roswell Protects Trees

Roswell, N. M.—Granville A. Richardson, Mayor of Roswell, is a lover of trees and has given published notice that the trees growing on the streets or other highways within the city of Roswell are city property, and that no one is permitted or allowed to cut or disfigure them in any way whatever without permission of the city authorities.

Plan for Drinking Fountain

Tyler, Tex.—A plan has been inaugurated here by a number of grocery merchants to give a per cent of their sales on specified days to the Woman's Temperance Union fund to be used in placing a drinking fountain on Court Square.

Child Robbers Force Operation of Curfew Law

Wheeling, W. Va.—Chief of Police Hastings announced he intends in the future to strictly enforce the curfew ordinance. This measure was passed by Council early last summer, but largely for the reason that no curfew bell or whistle was ever installed in the city, it has not been enforced. During the past few months a great many boys have been arrested by the police on charge of robbery. These cases have all been more or less serious and some of them have gone to the Grand Jury. Only a few days ago indictments were returned against eight boys accused of breaking and entering a saloon, and the authorities have come to realize that something must be done to keep these youngsters with pilfering tendencies off the streets at night. An effort was made when the ordinance was passed to secure the permission of the Board of Education to ring the school bells, but the School Commissioners turned down the request. It is probable now that arrangements will be made to install a siren whistle, the same as is used in Bellaire and other small cities for fire alarm purpose. The ordinance provides that children under the age of 14 must be off the streets in the summer time not later than 9:30 p. m. and in the winter not later than 8:30 p. m.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Streets—Notice of Closing—Injury

Stoliker vs. City of Boston; Same vs. Kiley; Same vs. Cahill Const. Co.—The rule that a traveler on a city street may be justified in thinking that a notice, placed on a barrier, that the street is closed to public travel, is no broader in its scope than the barrier itself, and that only that part of the street which is actually shut off is intended to be closed, applies to cases in which the road is improved for public travel, but only a part of its width is shut off, and applies more forcibly in a crowded street, where on the apparent indications a part of the width thereof is not only shut off, but according to the indications on the surface of the ground has been purposely left open for travel. The care which a traveler on public streets is bound to exercise must be proportioned to the visible dangers, and to whatever notice or warning is given to him by barriers, signs, or otherwise. Visible dangers, and whatever notice or warning was given to a traveler on a public street, by barriers, signs, or otherwise, were, in a suit by him for injuries, considerations for the jury, as affecting the care he was bound to exercise. Under the evidence in an action for injury to a traveler on a public street, held, that the question of his due care should have been submitted to the jury. In an action for injury to a traveler on a public street, evidence held to present questions for the jury as to the culpable negligence of each of defendants, a city, a contractor, and subcontractor. If a city intrusts to a street contractor or subcontractor the duty to protect the public by barriers or otherwise against a temporary obstruction in the street, it becomes liable for their failure, as it would be for its own.—Supreme Judicial Court of Massachusetts, 90 N. E. R., 927.

Liquor Regulations—Validity of Ordinance

Eidge vs. City of Bessemer.—The Code of 1907 authorizes municipal corporations to enact ordinances, not inconsistent with the State laws, to provide for the safety, preserve the health, promote the prosperity, improve the morals, etc., of the inhabitants. An ordinance made it unlawful and punishable to have or keep on storage, or on deposit, or have therein any vinous, spirituous or malt liquors, or intoxicating beverages, etc., at any place where any drinks or beverages are sold, or kept for sale, provided that the act shall not apply to licensed pharmacists, who sell alcohol for medical or scientific purposes, or wine for sacramental purposes. Held, that while ordinances enacted to prevent evasions of the State prohibition law by artifice, or making it an offense to keep intoxicants in any place with intent to sell them in violation of law, would be valid, the ordinance in question was not enacted for such purpose, and prohibited the keeping of intoxicants for any purpose in places innocent in themselves, as where nonalcoholic beverages were sold, and was void.—Supreme Court of Alabama, 51 S. R., 247.

Removal of Mayor—Intoxication

State ex rel. Kirby, County Attorney, et al. vs. Henderson, Mayor.—Where the Mayor of a city by intoxication voluntarily incapacitated himself for the performance of his duties, but without undertaking official business during such time, and in the case in question owed an official duty to the men from whom he procured intoxicating liquors unlawfully, he was guilty not only of private, but "official, misconduct," warranting his removal from office for intoxication pursuant to Acts of the Thirty-third General Assembly.—Supreme Court of Iowa, 124 N. W. R., 767.

Contract to Supply Water—Breach

Birmingham Water Works Company vs. Ferguson.—In an action against a water company for breach of contract to supply water to plaintiff in his residence by shutting off the supply for 30 hours, the inconvenience in obtaining water was a physical inconvenience flowing immediately out of the breach of contract, and within the contemplation of the parties as a probable result of the breach, and, in connection with proof of pecuniary loss, forms an item of recoverable damages.—Supreme Court of Alabama, 51 S. R., 150.

Public Water Supply—Rights of Consumers

State ex rel. Ferguson vs. Birmingham Water Works Company.—The business of a company furnishing water to the public is naturally monopolistic, and, being given the power of eminent domain to serve the needs of the public more effectually, its business is affected with a public use, and it must serve all consumers with equal facilities and without discrimination. If a rate to favored customers of a water company is less than the reasonable rate it may lawfully demand from all on a basis of uniformity, the discrimination is at the company's expense, and does not impinge on any right of consumers generally, and the granting of a rate to a considerable number of consumers more favorable than the rate fixed for consumers generally in absence of justification would be evident that the general rate is so unreasonable as to call for municipal or legislative revision within constitutional limitations, but making a concession to a consumer does not fix a new schedule of rates for all according therewith. If, within the limit of rates fixed by an ordinance-contract, and by its right to a reasonable compensation, a water company capriciously and oppressively, for ulterior and unlawful purposes, discriminates so as to wrong and injure consumers, it would plainly abuse its franchise, and the inquiry in such a case would be as to whether it might not be punished by indictment or process to revoke or annul its franchise.—Supreme Court of Alabama, 51 S. R., 354.

Restricting Use of Streets—Automobiles

State vs. Mayo.—The right to use the public streets for the purposes of travel as well as all personal and property rights is not an absolute and unqualified right. It is subject to be limited and controlled by the sovereign authority, the State, whenever necessary to provide for and promote the safety, peace, health, morals and general welfare of the people. To secure these and kindred benefits is the purpose of organized government, and to that end may the power of the State, called its police power, be used. Where the town of Eden under express legislative authority passed an ordinance closing to the use of automobiles certain public streets in that town, held, that the legislative enactment which authorized the closing to the use of automobiles such streets was not repugnant to any constitutional provision, and that the ordinance was constitutional.—Supreme Judicial Court of Maine, 75 A. R., 295.

Removal of Shade Trees—Damages Against City

McEachin vs. Mayor, etc., of City of Tuscaloosa.—Constitution of 1901, requiring municipal or other corporations and individuals, taking property for public use, to make just compensation for property taken, injured or destroyed by the construction or enlargement of its works, highways or improvements, gives one whose property is injured by improvements, etc., made under power of eminent domain, a right of action for resulting damage, irrespective of whether the fee of the property is in plaintiff or the taker, so that, if the removal of shade trees on the edge of a sidewalk in the improvement of the street by a city affected the value or enjoyment of the abutting property, the owner of such property would have a right of action against the city for damages, though he was not the owner of the trees and his right of ingress was not affected thereby.—Supreme Court of Alabama, 51 S. R., 153.

Violation of Ordinance—Appeal

City of Birmingham vs. Ridgway.—The record, on appeal by the city from a judgment for defendant on prosecution for violation of an ordinance, should show the trial court held the ordinance invalid; Code 1907, giving the city the right of appeal only where the validity of the ordinance is involved.—Supreme Court of Alabama, 51 S. R., 303.

Defect in Street—Notice of Injury

Mayor, etc., of City of Ensley vs. Smith.—In an action for injuries from defects in a city street plaintiff must aver and prove express notice of the defect, or facts from which it might be inferred that the city authorities were chargeable with constructive notice thereof. Where a case was tried by the court sitting as a jury the judgment was like a verdict to the jury, and will not be reversed on appeal unless plainly erroneous.—Supreme Court of Alabama, 51 S. R., 343.

NEWS OF THE SOCIETIES

American Road Builders' Association.—As the representative in this country of the Permanent International Road Association, formed at Paris in 1908, the association has sent out invitations to the Governors of every State and Territory in the United States and to the Governors of the various Canadian Provinces to appoint delegates to the Second International Congress of Road Builders, to be held in Brussels, Belgium, from July 31 to August 7. Each Governor is requested to appoint two delegates. A paragraph of the invitation reads: "His Majesty King Albert, President of the International Road Builders' Organization, has especially requested that the United States of America be represented."

Iowa Good Roads Association.—The convention held at Des Moines March 10-11 approved the road drag law, the action of some cities in using the drag, the organization of good roads associations, the work of the Highway Commission, the construction of permanent culverts, and the requiring of bids for road structures. The resolution favoring the appointment of county engineers was voted down on account of the expense involved by the farmer vote and the Township Trustees.

Commercial Club of Fort Wayne, Ind.—At the annual meeting President P. A. Randall outlined the year's work for the club. The following are members of the committee on civic interests: C. H. Worden, chairman; S. M. Foster, Dr. L. P. Drayer, Marx Dukes, Judge N. J. Vesey.

Alabama Good Roads Association.—At the convention, Montgomery, March 15-16, the following program was carried out:

Address of welcome on behalf of the State, by Gov. B. B. Comer.

Enrollment of delegates from counties, cities, towns, commercial and business organizations, farmers' clubs, automobile clubs and prominent citizens.

Appointment of standing committees.

Report of Committee on Local Entertainment, by E. H. Hyman, secretary Montgomery Commercial Club.

Report of work of association, by Secretary J. A. Rountree.

"Federal Aid and Good Roads," address by Senator J. A. Bankhead.

"Good Roads Legislation for Alabama," addresses by Hons. Emmet O'Neal, H. S. D. Malory, Walter D. Seed and Ferry Thomas.

"What will Good Roads Profit the Rural Districts," by J. A. Wilkerson, Commissioner of Agriculture.

"How Montgomery County Built Her Roads," by J. T. Bullen, County Engineer and Superintendent of Roads.

"How to Improve Our Farming Districts," J. T. Fletcher, Chairman Cotton and Agricultural Committee, Commercial Club.

"How We Built Good Roads Economically in Pike County," Judge A. C. Edmundson, Pike County.

"Good and Bad Roads," an illustrated address by J. E. Pennypacker, United States road expert.

"The Necessity for State Highway Commission," Hon. John W. Overton, author good roads amendment.

"Jefferson County Public Roads," Job Going, President Jefferson County Board of Revenue.

"Progress of Good Roads Movement in Alabama," John Craft, President of Alabama Good Roads Association.

"What Method or Methods Were Used by the Board of Revenue to Secure Funds to Build Good Roads in Montgomery County?" J. H. Cook, member Board of Revenue of Montgomery County.

"The Benefit of Good Roads to Railroads," Hon. E. L. Russell, President Mobile and Ohio Railroad.

"Necessity for Organization," by W. T. Brown, Vice-President Alabama Good Roads Association.

Query box on good roads. Queries to be answered by J. E. Pennypacker, United States road expert.

Engineers' Society of Pennsylvania.—The society will hold its annual convention in Harrisburg, Pa., June 1, 2 and 3. Those who are in charge of the arrangements for the convention are hopeful that it will be attended by three or four times as many engineers as last year. A manufacturers' exhibit will be conducted in connection with the convention. A hall has been secured which will afford twice as much space as was available last year.

Municipal Art Society of Baltimore.—Dr. W. H. Tolman, Director of the American Museum of Safety and Sanitation, of New York, lectured before the Municipal Art Society on "The Ways in Which European Cities Beautify Back Yards."

Tennessee State Board of Health.—The programme is announced for the first annual conference of the Tennessee State Board of Health with county and city health officers, to be held at Nashville April 6-7. The place of meeting is the Capitol Building. The programme follows:

Wednesday, April 6-10 a. m.—Invocation—Rev. George A. Lofron, Nashville; opening remarks by the Chairman, Heber Jones, M. D., President State Board of Health; address of welcome, Gov. Malcolm R. Patterson; response in behalf of the local Health Officers, K. S. Howlett, M. D., Health Officer, Williamson County; "Aims and Purposes of the Conference," J. A. Albright, M. D., Secretary State Board of Health; "Co-operation and Compensation Due Health Officials," W. H. Hawkins, M. D., Health Officer, Greene County; discussion opened by J. F. Arnold, M. D., Health Officer, Washington County; "Non-quarantineable Contagious Diseases," J. H. McSwain, M. D., City Health Officer, Paris. Discussion opened by W. W. Porter, M. D., Health Officer, Robertson County.

Afternoon Session, 1:30 o'clock.—"Smallpox; Its Management in Cities and Towns," Ben H. Brown, M. D., City Health Officer, Chattanooga; "Its Management in Rural Districts and How Best to Enforce Vaccination," T. B. Yancey, Jr., M. D., Health Officer, Fayette County. Discussion opened by W. E. Hibbett, M. D., City Health Officer, Nashville. "Hookworm Disease," Chas. W. Stiles, M. D., United States Public Health and Marine Hospital Service, Washington, D. C.

Night Session, 8 o'clock.—"What the Minister Can Do to Assist the Health Officer in the Promotion of Public Health," Rev. Wm. M. Anderson, Nashville; "Hookworm Disease" (stereopticon views), Chas. M. Stiles, M. D., United States Public Health and Marine Hospital Service, Washington, D. C.

Thursday, April 7—Morning Session, 9 o'clock.—"Pellagra: Its Diagnosis, Pathology and Etiology," J. M. King, M. D., Nashville; "Its Symptomatology," Louis Leroy, M. D., State Bacteriologist, Memphis; "Its Treatment," B. G. Tucker, M. D., County Health Officer, Davidson County, Nashville. Discussion by Max Goltman, M. D., President City Board of Health, Memphis. "How Best to Proceed in the Abatement of Nuisance Under the Present Health Laws," John R. Aust, attorney-at-law, Nashville; "Medical Legislation; Its Relation to the Public Health," C. A. Abernathy, M. D., Secretary State Board of Medical Examiners, Pulaski. Discussion opened by D. E. Shields, M. D., City Health Officer, Morristown.

Afternoon Session, 1:30 o'clock.—"Shall the State Care for Indigent Consumptives?" Louis Leroy, M. D., State Bacteriologist, Memphis. Discussion opened by Wm. R. Cochrane, M. D., City Health Officer, Knoxville. "Failure of Physicians to Report Contagious Diseases a Menace to Public Health and a Disregard for the Law," N. F. Raines, M. D., Health Officer, Shelby County, Memphis. Discussion opened by Geo. W. Penn, M. D., City Health Officer, Humboldt. "Responsibility of the Local Health Officers in the Prevention of Typhoid Fever," R. C. Smith, M. D., County Health Officer, Obion County; "Medical Inspection of Public Schools," David Spence Hill, Ph.D., Peabody College for Teachers, Nashville. Discussion opened by R. L. Jones, State Superintendent of Public Instruction.

Night Session, 8 o'clock.—"Enforcement of the Pure Food and Sanitary Law," Lucius P. Brown, Ph.D., State Food and Drugs Inspector; "Tuberculosis" (stereopticon views), Prof. E. G. Routzahn, Director American Tuberculosis Exhibit.

City Marshals and Chiefs of Police of Texas.—The annual meeting of the Texas Association of City Marshals and Chiefs of Police will be held in Sherman May 18 to 20. This date was set at the meeting of the executive committee in Chief Polk's office, Fort Worth, Tex., in accordance with the suggestion of Chief Despain of Sherman. Those attending the meeting were: Fred Long of Itasca, President; John Willie of Mineral Wells, John R. Browne of Weatherford, Henry Despain of Sherman and Chief Polk of Fort Worth.

Southern New York Volunteer Firemen's Association.—The annual convention will be held in Freeport, L. I., next October.

Iowa Cement Users' Association.—The following officers were chosen at the sixth annual convention, held at Cedar Rapids, May 10-12: President, L. L. Bingham, Estherville; first vice-president, C. C. Morillat, Winfield; second vice-president, A. O. Anderson, Lake City; secretary, J. A. Williams, Ames; treasurer, G. E. Tathwell, Cedar Rapids.

Cincinnati Master Plumbers' Association.—The Ohio State Board of Health has accepted an invitation from the Cincinnati Master Plumbers' Association to attend a public discussion on sewage disposal to be held at the Ohio Mechanics' Institute Hall April 5, at 7:30 p. m. Mayor Schwab will speak on "The Millcreek Sewer," and Dr. Swartzel on "Water Stream Pollution." Mr. John W. Hill, member of the State Board of Health, will also give a general talk. The addresses will be illustrated with stereopticon views, showing the construction of basins and sewers, and the public is invited. The committee in charge for the Cincinnati Master Plumbers' Association consists of Messrs. Clifford T. Schlemmer, Ray J. Hillenbrand, Jerome Murphy, William Attlessey and John J. Vogelpohl.

Canadian Society of Civil Engineers.—At the regular meeting in Montreal, March 17, papers were presented by H. R. Lordly on "Subaqueous Concrete Work," and by W. H. Breithaupt on "Grade Separation."

Calendar of Meetings

April 6.

American Society of Civil Engineers.—Regular meeting, Society House, New York.—Charles Warren Hunt, Secretary, 220 W. 57th st., New York, N. Y.

April 26-30.

American Water Works Association.—Thirty-fifth annual convention, Gruenwald Hotel, New Orleans, La.—J. M. Diven, Secretary, Charleston, S. C.

May 2-4.

National Conference on City Planning.—Second annual conference, Rochester, N. Y.—Flavel Shuteff, Secretary, 19 Congress Street, Boston, Mass.

May 6-7.

Appalachian Engineering Association.—Annual meeting, Winston-Salem, N. C.—Harry M. Payne, Secretary, Morgantown, W. Va.

May 27-29.

Louisiana State Firemen's Association.—Fifth Annual Convention, Lafayette.—Wm. J. Kleinpeter, Secretary, Gretna, La.

June 22-24.

Indiana Municipal League.—Annual Convention, Richmond.—Baltz A. Bescher, Secretary, Richmond, Ind.

August 23-26.

International Association of Fire Engineers.—Annual Convention, Syracuse, N. Y.—James McFall, Secretary, Roanoke, Va.

October 11-16.

American Society of Municipal Improvements.—Seventeenth annual convention, Erie, Pa.—A. Prescott Folwell, Secretary, 239 W. 39th st., New York, N. Y.

PERSONALS

ADAMS, ALTON D., Worcester, Mass., has just reported to Brattleboro, Vt., on the power of the Connecticut River, and on the cost and operating expenses of an electric plant.

ANDERSON, LEWIS W., City Engineer of Grand Rapids, Mich., for the past 10 years, has resigned.

BLOCKER, A. T., St. Petersburg, Fla., has been elected Mayor.

BRIGHT, JOHN, Alderman-at-Large and President of the Common Council of Poughkeepsie, N. Y., passed away recently, aged 55 years.

BROOKS, WILLIAM F., Cambridge, Mass., has been reelected Mayor over George M. Long.

BROWN, DAVIS, Louisville, Ky., has been appointed member of the Louisville Board of Water Works, succeeding Sebastian Zorn, resigned.

CAMPBELL, FRANK, Alamosa, Cal., has been appointed Chief of the Volunteer Fire Department.

CHAPPEL, J. FEN, Vallejo, Cal., has been elected Mayor; G. Pryn has been elected Commissioner of Public Works, and George H. Savage, Superintendent of Streets.

CORSON, S. CAMERON, Norristown, Pa., has been re-elected City Engineer.

GOODE, R. E., Kenelly, Tex., has been appointed City Clerk.

HART, JOHN W., Oakland, Md., has been elected Mayor.

HUEY, EDWARD, Marshal of Seelyville, Ind., has resigned, and Charles Shepherd, deputy and former Marshal, has been appointed to the position.

HURD, P. S., Chief of Police of Dover, Del., has been elected by Council by a vote of five to four over Mr. Cohee, and R. E. Hurd, assistant.

MADDOX, JAMES H., Street Commissioner of Fort Worth, Tex., is to be presented with an automobile by local automobile owners, in recognition of his services as a good roads or street builder, as his modesty forbids his asking the city for it, notwithstanding that the head or executive officer of nearly every other department has one.

MOSS, FRANK E., member of the Water Board of South Hadley Falls, Mass., has resigned, following charges, and an examination is now being made of the books of the department.

MUDGETT, GEORGE, Spokane, Wash., has been appointed by Mayor Pratt as member of the Board of Public Works, to succeed Carl W. Tuerke, removed, and will probably become purchasing agent and Fire Commissioner, and Commissioner Armstrong will probably take the Street Department.

MURPHY, HAROLD, Assistant to City Engineer Charles M. Slocum, Springfield, Mass., has been removed by Mr. Slocum, who charges him with disloyalty and interference. Mr. Murphy is a Civil Service employee and has retained counsel to secure reinstatement.

OATES, E. G., President of the Water Commission of Knoxville, Tenn., has resigned.

PETTERSON, H. A., of the Engineering Department of the Los Angeles Aqueduct Commission, and A. A. Schmidt, of the Water Department of Los Angeles, have formed the firm of Peterson & Schmidt, engineering contractors. They will specialize in concrete work. Offices have been taken in the Pacific Electric Building.

PILLSBURY, L. O., Chief of the Fire Department of Enid, Okla., has been also appointed as electrical inspector and Build-

ing Commissioner by the City Commission, which combined the offices. He will receive \$125 per month, and is to furnish his own conveyance.

SEIMERS, GEORGE, of Fairmont, W. Va., has been named as Water Commissioner, and Charles E. McCray, Sr., as Street Commissioner, to succeed James E. Morgan, who filled the dual office, and will serve until the annual elections next month.

WOODEN, HARRY W., Waterbury, Conn., of the City Engineering Department, was killed on February 22 by the fall of a bank at the reservoir now under construction there.

WOOLSON, PROF. IRA H., adjunct professor of civil engineering, Columbia University, in charge of fire tests of building materials, has resigned to become consulting engineer for the National Board of Fire Underwriters.

Mayors have been elected in cities in Maine as follows:

Augusta.—Frederick W. Plaisted, for the fourth time, defeating the present Mayor, Treby Johnson.

Bangor.—John F. Woodman, for his fourth successive term over Charles R. Dunton.

Belfast.—Edgar F. Hanson, re-elected for the sixth time.

Biddeford.—Albert O. Marcille, now City Clerk, over George A. Anthoine. Mr. Marcille is the first French-American to be elected Mayor of a Maine city.

Brewer.—Ambrose F. Pendleton, re-elected, over Horace F. Green.

MUNICIPAL APPLIANCES

The Automatic Safety Water Gauge and Gauge Cock

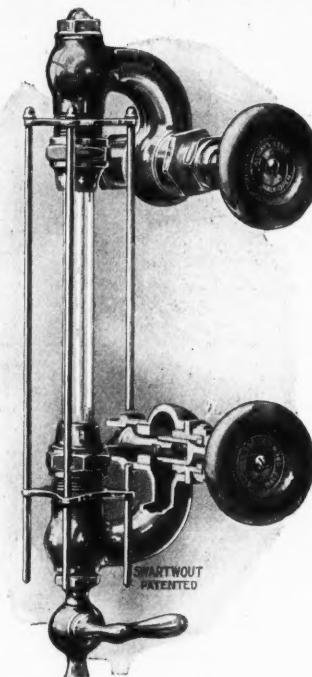
THE disadvantage of the usual form of gauge glass is the frequency with which it breaks, endangering the eyesight of the boiler attendant, allowing the water to escape from the boiler to a dangerously low level, and the difficulty and danger of replacing the glass while the boiler is under pressure. To eliminate these difficulties new and ingenious devices have been incorporated in the Swartwout Automatic Safety Water Gauge, made by the Ohio Blower Company, and a similar design applied to the mechanism of the gauge cock.

The use of the gooseneck construction, shown by the accompanying illustration, is one of the leading features, while the automatic valve with its removable valve case is the other. With the gooseneck construction the gauge glass is offset from the gauge bodies so that the glass may be cleaned, replaced or blown out without in any way disturbing the gauge bodies or the valves. Because of the greater flexibility of the Swartwout, the strain common with other forms of gauge glass is practically eliminated, thus removing the greatest cause of gauge glass breakage. Goosenecks also permit a glass 2 to 4 inches longer than other forms, an important feature when the glass is 25 or 30 feet above the ground.

The internal construction of the automatic valve and removable case is peculiar. A spring holds the valve away from its seat while the device is in use, and to close a valve the handle must be turned until the spring motion is taken up. At the inner end of the valve there is a plate or flat projection, which acts as a scraper to loosen any sediment gathering in the boiler connection. With every turn of the hand wheel it revolves, thus maintaining a free opening. The valve is self-regrinding, every turn of the hand wheel moving the valve on its seat, so that whenever it is necessary to clean the valve parts or replace

a broken glass the turning of the hand wheel causes the regrinding action.

The illustration shows how independent of the gauge glass is the gauge body and the removable valve. The valve and seat is removed by taking out the valve casing, which may be done

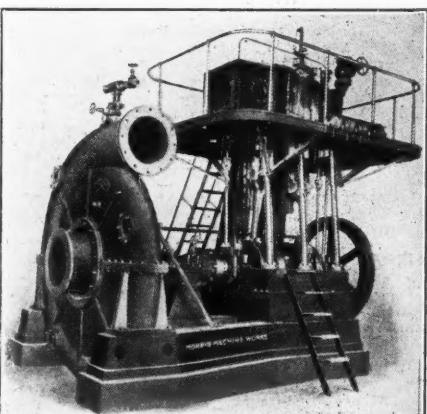


SWARTWOUT GAUGE

without disturbing the gauge bodies or boiler connections. A small screwdriver or pen knife will readily remove a screw, which operation releases all the parts. The glass is cleaned by removing the plug at the top or the drain cock at the bottom and inserting a swab; the glass need not be removed nor the packing disturbed.

Centrifugal Sewage Pumping Engine

THE illustration shows one of a pair of 20-inch sewage pumping engines built for the city of Norfolk, Va., by the Morris Machine Works, Baldwinsville, N. Y. Each engine has a capacity of 9,000 gallons per minute working against a head of 45 feet. The engine holds a record of a continuous run of



CENTRIFUGAL SEWAGE PUMPING ENGINE

210 days and nights without one stop. Pumps of this class are built to suit the conditions under which they are to operate. The Morris Machine Works have a complete line of patterns and can furnish pumps for any duty and are prepared to give full information on receipt of particulars.

THE WEEK'S CONTRACT NEWS

**Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage
Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Street Railways—Sanitation,
Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards**

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we can not guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered

BIDS ASKED FOR

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
SEWERAGE—Continued				
Ontario.....	Toronto.....	April 19, noon.....	Bldg. high level interceptor: 1,216 ft. 7.10x10 ft. diam. flattened shape; 2,246 ft. 9.6 ft. circular; 2,072 ft. 9.3 ft. and 1,336 ft. 9 ft.; 2,293 ft. 9.9 ft.; siphon crossing under River.....	C. H. Rust, City Engineer.
Oklahoma.....	Enid.....	April 21, noon.....	Bldg. lateral sewer in 5 blocks, in Garland addition.....	E. R. Lee, City Clerk.
Illinois.....	Danville.....	May 1.....	Constructing sewer in 2 additions; cost \$70,000.....	Walter E. Winn, City Engineer.
Kansas.....	Manhattan.....	May 3, 3 p.m.....	Bldg. complete sanitary sewer system; cost, \$80,000, inc.: pumping station, 1,624 ft. 24-in., 5,360 ft. 18-in., 5,200 ft. 15-in., 1,700 ft. 12-in., 67,000 ft. 8-in. pipe; 159 manholes; 23 flush tanks.....	Con M. Buck, City Engineer. Geo. M. Adair, Street Comr.
New Jersey....	Perth Amboy....	May 21, 8:30 p.m....	Constructing 12-ft. sewer in Baker Place.....	
WATER SUPPLY				
Minnesota.....	Minneapolis.....	Mar. 25.....	Furnishing 2,000 5-8-in. corporation cocks, complete.....	Henry N. Knott, City Clerk.
Pennsylvania.....	Lebanon.....	Mar. 25, 8 p.m.....	29,100 ft. 20-in. gravity main and 3,700 ft. 16-in., 13,900 ft. 32-in., 3,900 ft. 10-in. main, in sts. T. R. Crowell, City Eng'r.	J. D. Kerr, Sec'y Wtr. & Lt. Comrs.
Kansas.....	Wakefield.....	Mar. 25.....	Bldg. water works: furn. & erect. 30,000-gal. steel tank on 100-ft. tower; 25 h.p. internal comb. engine; furn. f.o.b. cars Wakefield, 200-gal. vert. triplex deep well pump.....	W. D. Starling, City Clerk.
California.....	Los Angeles.....	Mar. 28.....	Furn. 2,079 tons standard bell and spigot and 23 tons hub and flange c. i. water pipe.....	Board of Water Commissioners.
Ohio.....	Cincinnati.....	Mar. 28, 2 p.m.....	Furnishing and installing water system at dam 37, Ohio river.	Col. J. G. Warren, U. S. Engrs.
Illinois.....	Summit.....	Mar. 28.....	Bldg. brick pump house and installing deep well pump oper. with electric motor; also pipe, con. electric wiring, etc.....	Jas. Johnstone, Village Clerk. Geo. H. Tiedeman, Mayor.
Georgia.....	Savannah.....	Mar. 30.....	Furnishing 150 h.p. boiler for water works; H. S. Jaudon, C.E.	Pearl Springs Water Co.
Colorado.....	Rocky Ford.....	April 1.....	Constructing water works to cost \$500,000. R. A. Sawyer, C.E.	
Texas.....	Miles.....	April 1.....	Furnishing 11,500 ft. 4-in., 3,000 ft. 6-in. c. i. pipe; 35 fire hydrants; 11 valves; 350-gal. triplex pump; air compressor, power driven; 50 h.p. gasoline engine.....	O'Neil Eng. Co., Dallas.
Texas.....	Sherman.....	April 14.....	Extension and improvement of water works; cost, \$12,000.....	P. C. Thurmond, City Engineer.
Manitoba.....	Winnipeg.....	April 4.....	Furnishing c. i. water pipe, valves and hydrants for city.....	M. Peterson, Sec'y Bd. Control.
Wisconsin.....	Madison.....	April 5.....	Furn. and install. 200 tons 4 to 10-in. c. i. water pipe, 70 hydrants, etc., for light, heat and power plant in Capitol Park.	Lew F. Porter, Sec'y Capitol Com'n. Wm. F. Wilcox, Gen. Mgr., Wtr. C'mn.
Mississippi.....	Meridian.....	April 5.....	Bldg. 8,500 ft. 24-in. reinforced concrete conduit.....	M. M. Thompson, Mayor.
Mississippi.....	Benoit.....	April 5.....	Bldg. water works including well; cert. check, \$1,000.....	C. T. Goodier, Constr. Q. M.
New Jersey.....	Ft. Hancock.....	April 6, noon.....	Bldg. pumping plant and installing machinery at Fort.....	J. J. Haarer, Comr. Pub. Works.
Michigan.....	Detroit.....	April 7.....	Erecting bldgs. for Fairview Pumping Plant; separate bids.	Robt. S. Fedder, City Clerk.
Colorado.....	Fort Collins.....	April 14.....	Bldg. 5,000,000-gal. reservoir on Bingham Hill, with concrete sides and bottom and concrete or frame roof, etc.....	L. F. Dickson, Mayor.
Alabama.....	Opelika.....	April 15.....	Furnishing water to city at expiration of existing contract.	M. D. Lucas, City Clerk.
South Carolina.....	Florence.....	April 15.....	Bldg. 7 miles of water main; deep well pump (air lift system), c. i. pipe, hydrants and valves; cost, \$30,000. J. N. Johnson, Engineer.....	Marietta Water Company.
Pennsylvania.....	Marietta.....	April 20.....	Laying submarine line 2,200 ft. 10-in. universal c. i. pipe.....	
BRIDGES				
Ohio.....	Cincinnati.....	Mar. 25.....	Constructing a culvert on Gurley road, Green twp.....	F. Dreih, Clk. Co. Comrs.
Ohio.....	Sidney.....	Mar. 26, noon.....	Bldg. superstructure of steel hwy swing bridge, 50-ft. span, 14-ft. roadway over M. & B. Canal, in Dawson.....	Shelby County Commissioners.
Colorado.....	Meeker.....	Mar. 26.....	Constructing steel bridge over White river.	C. W. Comstock, Denver, State Engr.
Nebraska.....	Fairbury.....	Mar. 28.....	Bldg. concrete arch, 81 ft. long, at 7th and G sts.	R. E. Riley, City Clerk.
Nebraska.....	Grand Island.....	Mar. 28, noon.....	Bldg. all steel, wood, pile and truss bridges for year from Mar. 28	G. H. Poell, Clerk, Hall County.
Ohio.....	Lisbon.....	Mar. 28.....	Bldg. steel I-beam bridge; 3 concrete culverts.	Board of County Commissioners.
Indiana.....	Portland.....	Mar. 28.....	Bldg. 160-ft. steel bridge; also 100-ft. concrete arch.	Comrs. of Jay and Blackford Cos.
Indiana.....	Hartford City.....	Mar. 28, 2 p.m.....	Erection and construction of various bridges for County.	L. W. Dougherty, County Auditor.
Oklahoma.....	Muskogee.....	Mar. 28, 10 a.m.....	Bldg. 3 steel bridges: 160, 120 and 90 ft.; also 36-ft. conc. arch.	J. J. Brotherton, Chm. Co. Comrs.
Pennsylvania.....	Kempton.....	Mar. 29, 10 a.m.....	Erection of reinforced concrete arch bridge.	A. L. Rhoads, Co. Contr. Reading.
Minnesota.....	Minneapolis.....	Mar. 31, 5 p.m.....	Bldg. bridges Nos. 1, 3 and 4: on comb. rein. concrete and granite-faced bridge; Nos. 3 and 4 also all concrete.	J. A. Ridgway, Sec'y Park Comrs.
Ohio.....	Bryan.....	April 4.....	Bldg. several reinforced-concrete sub and superstructures.	R. H. Weaver, County Auditor.
Indiana.....	Decatur.....	April 4, 10 p.m.....	Bldg. number of bridges and abutments for County.	H. S. Michaud, County Auditor.
Alabama.....	Talladega.....	April 4.....	Bldg. 2 steel bridges, one over creek, other over So. R. R.	J. E. Camp, Judge of Probate.
Louisiana.....	Harrisonburg.....	April 4, noon.....	Repair of Bayou Louis bridge.	H. W. Bethard, Sec'y Police Jury.
Illinois.....	Streator.....	April 4, 5 p.m.....	Bldg. \$30,000 bridge over river; grade and pave approaches.	John B. Patterson, City Clerk.
Indiana.....	La Porte.....	April 4.....	Bldg. bridge over Kankakee river at English Lake.	H. C. Miller, County Auditor.
California.....	San Jose.....	April 5, 11 a.m.....	Bldg. \$15,000 reinforced concrete bridge over Coyote creek.	J. G. McMillan, County Surveyor.
Washington.....	Kalama.....	April 5, 10 a.m.....	Bldg. 300-ft. steel hwy. bridge at Castlerock, one span with wood flooring, 16-ft. roadway; concrete sub., 2 piers, 70 ft. high, 55 ft. being above water.	G. S. Roberts, County Engineer.
Colorado.....	Denver.....	April 9, noon.....	Bldg. 2 steel bridges in Eagle and Ouray Counties.	C. W. Comstock, State Engineer.
Louisiana.....	Gretna.....	June 1.....	Constructing steel bridge over canal in Harvey Parish.	E. M. Hubert, Sec'y Police Jury.
Utah.....	White Rocks.....	June 1.....	Bldg. substructure of \$18,000 steel bridge at Vintah and Ouray Indian agency. M. J. Patterson Contr. Co., Denver, Colo., has contract for superstructure.	Comr. Indian Affairs, Wash., D. C.
LIGHTING AND POWER				
California.....	Los Angeles.....	Mar. 28, 2 p.m.....	Franchise to construct and operate for 30 years electric light pole and wire system on certain highways of County.	Board of County Supervisors.
Wisconsin.....	Black Riv. Falls.....	Mar. 29.....	Constructing \$12,000 power plant for city.	Geo. Henshall, Chm. Lt. & Wtr. Com.
Ontario.....	Port William.....	April 1.....	Gas franchise, inc. bidg. of plant, mains, etc., and operation.	John Wilson, Asst. City Engr.
California.....	Hayward.....	April 6.....	Purchase of electric light and power franchise.	Board of City Trustees.
New York.....	Albany.....	April 7, noon.....	Bldg. 4 hydroelectric power plants on canals; also for lighting 8 locks on 3 canals; Engineer's estimate, \$180,360.	F. C. Stevens, Supt. Pub. Works.
Oklahoma.....	Ft. Sill.....	April 13, 10 a.m.....	Electric light and power plant and lighting at Fort.	Capt. David L. Stone, Q. M.
Maine.....	Rumford.....	April 14.....	Ledge excav. & masonry cradles for 1,000 ft. of 14-ft. penstock, relief pipe concrete spillway; mach. & bldg. excav. & conc. foundations; brick & concrete station bldg. etc.; 4,000 cu. yds. ledge excav.; 500 cu. yds. rubble masonry; 1,200 cu. yds. concrete; 112 cu. yds. brick work.	Rumford Falls Power Co.
Alberta.....	Camrose.....	April 15.....	For installation of elec. light and power plant on 10-yr. franchise.	O. B. Olson, City Sec'y-Treas.
Alabama.....	Opelika.....	April 15.....	Furn. electric light to city at end of present contract.	L. F. Dickson, Mayor.
MISCELLANEOUS				
New York.....	Niagara Falls....	Mar. 25, noon.....	Bldg. complete, 2 public comfort stations on Goat Island.....	E. H. Perry, Supt. State Reservat'n.
Ohio.....	Dayton.....	Mar. 28, noon.....	Sprinkling over 100 sts. during season.	J. C. Ely, Dir. of Pub. Service.
Pennsylvania.....	Philadelphia.....	Mar. 28, noon.....	Furn. to city hydraulic dredge, comb. dredge, 80 and 60-ft. tug boats, one or three 500 cu. yds. also 300 cu. yds. bottom-dump scows.	
Ontario.....	Toronto.....	Mar. 30.....	All dredging in harbor for year.	Jos. F. Hasskarl, Act. Dir. of Docks.
New York.....	Albany.....	Mar. 29, noon.....	Canal work, 4 contracts.	C. W. Postlethwaite, Harbor Master.
Illinois.....	Ft. Sheridan.....	Mar. 30, noon.....	Constructing garbage crematory and building.	F. C. Stevens, Supt. Public Works.
Montana.....	Butte.....	Mar. 30, 2 p.m.....	Bldg. \$500,000 Co. Court House; sep. bids for heating, plumb., piping, ventilating and elec. elevators. Link & Haire, Archts.	Capt. M. E. Saville, Const. Q. M.
Maryland.....	Baltimore.....	Mar. 30, 11 a.m.....	Building and delivering one fire boat.	J. H. Cronin, Chm. Bd. Co. Comrs.
Minnesota.....	Faribault.....	Mar. 31.....	Bldg. fireproof jail and sheriff's residence, whole or separate.	J. Barry Mahool, Mayor.
Wyoming.....	Basin.....	April 2.....	Bldg. new jail and sheriff's residence on old site.	Albert Schiffel, Aud., Mankato.
Georgia.....	Griffin.....	April 4.....	Erecting City Hall; Harralon Bleckley, Arch., Atlanta.	Board of County Comrs.
North Dakota.....	Ashley.....	April 4.....	Furnishing 12 metal culverts of various sizes.	Douglas Boyd, Chm. Pub. Bldg. Com.
New Mexico.....	Roswell.....	April 6.....	Bldg. \$110,000 Court House; J. H. & W. N. Rapp Co., Arch.	John F. George, County Auditor.
Wisconsin.....	Crandon.....	April 6.....	Erecting \$20,000 jail and sheriff's residence.	W. M. Atkinson, Chm. Co. Comrs.
Indiana.....	Evansville.....	April 8.....	Sprinkling 25 streets from April 11 to Nov. 11, 1910.	J. M. Whisenant, Sec'y Bldg. Com.
Indiana.....	Fort Wayne.....	May 5, 10 a.m.....	Bldg. public comfort station under sidewalk at Court House.	Board of Public Works.
Massachusetts.....	Boston.....	May 15.....	Furnishing watering carts, also watering and oiling sts. in 4 districts of city; also for cleaning sts. and sidewalks in 4 districts, to Dec. 1, 1910.	G. W. Lindemuth, County Auditor.
				G. C. Emerson, Supt. of Streets.

STREET IMPROVEMENTS

Anniston, Ala.—Board of county commissioners has appropriated \$18,000 for construction of roads and bridges in First, Second, Third and Fourth districts.

Mobile, Ala.—Council will consider paving of Broadway, width 50 ft., with wood blocks.

Brinkley, Ark.—Merchants' Association has plans under way for construction of permanent roadway from this city to Wheatey.

Little Rock, Ark.—Council is considering construction of concrete sidewalks on all streets in the territory between Seventh and 16th sts.

Berkeley, Cal.—Town is considering election on \$10,000 street bonds.

Los Angeles, Cal.—Board of Supervisors has ordered bids for construction of Eagle Rock rd. from Glendale to Mountain ave. and proposed Pomona-Bassett highway; specifications have been prepared for Whittier rd. from this city to Whittier.

Oakland, Cal.—Council has adopted resolutions for improving six streets; City Engineer will prepare plans for grading Herzog st.

Pasadena, Cal.—Street Superintendent John Beyer and City Engineer S. J. Van Ornum have recommended to Council that following streets be improved by oiled macadam: California, Walnut, Villa, Center and part of South El Molino ave.

Pasadena, Cal.—Council has decided to improve Arroyo Drive at once.

Sacramento, Cal.—Twenty-second st. will be paved with asphaltum.

Sacramento, Cal.—County Surveyor C. M. Phinney has recommended \$2,000,000 bond issue for constructing roads, bridges and culverts.

San Pedro, Cal.—North End Improvement Association is considering paving Fourth and South sts. to West Basin and East and West streets to inner harbor.

Colorado Springs, Col.—City is considering paving the downtown district; cost \$500,000.

Denver, Col.—Jefferson County Commissioners have decided to build boulevard from this city to Golden.

Trinidad, Col.—Residents of Ash st. are urging paving of street with asphalt macadam.

Georgetown, Del.—Sussex County Commissioners have levied tax for building new road.

Washington, D. C.—City has \$100,000 available for resurfacing of streets.

Arcadia, Fla.—De Soto County Commissioners have withdrawn until next August recently noted \$500,000 road bond issue.

St. Augustine, Fla.—Paving of St. George st. is being considered.

Atlanta, Ga.—Special Council Committee and Citizens' Committee have adopted resolutions recommending \$20,000 expenditure for improvement of Spring st.

Clarksville, Ga.—City will macadamize Washington st. and construct brick or concrete sidewalks; engineer not yet selected.—J. H. Hicks, Mayor.

Dalton, Ga.—Citizens will vote on \$25,000 bonds for street paving.

Elberton, Ga.—City will pave Oliver st. with vitrified brick; will also lay concrete sidewalks.

Waycross, Ga.—City will pave Carswell and Albany aves. with vitr. brick.

Champaign, Ill.—City is considering laying vit. brick paving, concrete curb and gutter; cost \$100,000.—C. D. Stevens, Clerk Board of Local Improvements.

Chicago, Ill.—City will repair macadam, asphalt, brick, creosoted and cedar block pavements as soon as practicable.—F. T. Fowler, Superintendent of Streets.

Danville, Ill.—Plans have been prepared by City Engineer W. E. Wynn for three blocks of vit. brick paving on Conron st., with concrete curb and gutter.

Oregon, Ill.—Public highway will be constructed from Woolley spring, and connecting with the public highway at Rockvale.

Pana, Ill.—Paving of Second and Third sts. is being considered.

Peoria, Ill.—Public Works Department is considering paving of 63,484 ft.

Peoria, Ill.—Board of Local Improvements has a profile drawn for system to include Hillyer st., Haines ave., 6th st., Elizabeth st. and 5th st.; westrumite will be used.

River Forest, Ill.—Bids will be at once received by Engineer R. A. Williams, 84 La Salle st., Chicago, for asphalt paving on Chicago ave.

Urbana, Ill.—Plans are being prepared by City Engineer U. S. Morgan for 1,500 sq. yds. vit. brick alley paving and concrete curb.—C. B. Holmes, Clerk Board of Local Improvements.

Hammond, Ind.—Board of Public Works has adopted resolutions, plans and specifications for paving Highland st.—Adam R. Ebert, President.

Hammond, Ind.—Board of Public Works has ordered plans prepared for paving and

constructing sidewalks on Sheffield ave; also for opening Hoffman st.—Otto H. Duerke, City Clerk.

Hanover, Ind.—Town Board is receiving bids for laying concrete pavements on Main st., length about one mile.

LaFayette, Ind.—Plans have been prepared by City Engineer J. B. Truman, 3 Court House, for 9 blocks of vit. brick sheet asphalt, asphalt block or cement paving on four streets.

Logansport, Ind.—City Engineer H. H. Thompson has prepared plans for 7,000 sq. yds. of vit. brick paving on Sycamore st.

Petersburg, Ind.—Pike County Commissioners have decided to expend \$40,000 for road improvements in Jefferson Township and \$16,000 for road improvements in Logan Township.

South Bend, Ind.—Board of Works has approved resolution for paving of E. Navarre st.

Wabash, Ind.—Council has passed resolutions for improving portions of Columbus st. and Falls ave.

Warsaw, Ind.—Council has passed resolution ordering laying of pavement on three principal streets.

Eldora, Ia.—Plans have been prepared for the construction of about 16 blocks of cement pavement.—S. B. Gardner, Engineer; L. J. Stout, City Clerk.

Greenfield, Ia.—City is establishing grades preparatory to street paving.

Mount Pleasant, Ia.—Plans are being prepared for construction of 40,000 sq. yds. of vit. brick pavement.—C. E. Waterhouse, Engineer.

Osage, Ia.—City will soon receive bids for eight blocks of cement paving.—S. B. Gardner, Eldora, Engineer.

Independence, Kan.—City Commissioners have passed ordinances for 28 blocks of paving.

Houma, La.—Bids will be advertised for constructing mile of concrete sidewalks.

Denton, Md.—County is considering advisability of issuing \$50,000 road and bridge bonds.

Lawrence, Mass.—Cost of abolishing all grade crossings in city has been estimated at \$2,500,000.

Lawrence, Mass.—Board of Aldermen has passed \$30,000 loan to pave Lawrence st.

Lawrence, Mass.—Cost of block paving Broadway has been estimated at \$193,000.

Marblehead, Mass.—Town has appropriated \$2,000 for macadamizing Ocean st., \$1,475 for sidewalks at Clifton, and \$1,500 to try liquid asphalt on streets.

North Andover, Mass.—Town has voted to macadamize Essex, Osgood, Railroad, Johnson and other streets.

Ware, Mass.—Town will vote Mar. 28 on \$1100 appropriation for road improvements.

Worcester, Mass.—City has awarded \$125,000 street bonds to Estabrook & Co. at \$103.55.

Minneapolis, Minn.—Council has ordered \$550,000 worth of paving done during season by day labor; largest amount is to be creosoted wood block on 5-in. Portland cement concrete foundation.—E. R. Dutton, Assistant City Engineer.

Long Beach, Miss.—Council is considering opening of street from railroad station west to White Harbor.

Carterville, Mo.—City is considering construction of seven blocks of vit. brick paving.—Frank Funk, Joplin, Engineer.

Carthage, Mo.—City will at once receive bids for 1,320 lin. ft. of macadam paving on Horner st.—F. B. Newton, City Engineer.

Kansas City, Mo.—Resolution has been adopted to pave Wyoming ave. with bituminous for width of 24 ft.

Springfield, Mo.—City is considering \$100,000 bond issue for construction of boulevard system; also \$25,000 of bonds for street cleaning.—G. W. Hackney, City Clerk.

Springfield, Mo.—City will soon let contract for 12 blocks of Hassam paving on Jefferson st.—H. G. Horton, City Engineer.

Webb City, Mo.—City is considering laying of about 19 blocks of asphaltic macadam paving, curbing and guttering; also 10 blocks of gravel paving and extensive granite walks.—A. J. McKenzie, City Engineer.

Butte, Mont.—Council has adopted resolution for grading of Park st.

Hastings, Neb.—Citizens have given Council authority to issue \$50,000 intersection bonds; Council will at once advertise for bids for paving 3d st. and Lincoln ave. district.

Omaha, Neb.—City will lay about 15 miles of pavement this year. Address City Engineer Craig.

Manchester, N. H.—Council favors \$52,000 bond issue for new highways.

Salem, N. H.—Town has voted \$2,000 to repair turnpike.

Atlantic City, N. J.—Council has adopted plans for paving portions of about 20 streets.

Haddonfield, N. J.—Council is considering \$100,000 bond issue for street and highway betterment.

Harrisonville, N. J.—Congress has appropriated \$10,000 for road from this town to Fort Mott.

Long Branch, N. J.—Bids will be advertised for building Norwood ave. with bitumen; also furnishing gravel for repairing county roads.—J. K. Allen, County Engineer.

Mechanicsville, N. J.—Macadamizing of Centre st., Maple and Park aves. is being considered.

Paulsboro, N. J.—Council has ordered immediate laying of cement walks ordered some time ago.

Roswell, N. M.—Council has passed ordinance ordering laying of cement sidewalks.

Binghamton, N. Y.—Taxpayers have voted \$25,000 bonds for paving purposes.

Gouverneur, N. Y.—Paving of Main st. is being considered.

Homer, N. Y.—Village will receive about \$40,000 from State for paving principal street.

Mayville, N. Y.—Board of Supervisors has accepted plans and estimates of Division Engineer Wilbur, Rochester, for paving of a section of Roberts rd. in towns of Dunkirk and Sheridan.

Naples, N. Y.—Village is urging State to build road through Main and Cohocton sts.

Syracuse, N. Y.—City Engineer Henry C. Allen has prepared estimates upon cost of paving Landon ave.: Sandstone, creosote wood block or Hassam pavement with granite top, stone curb, \$15,900; with combined curb and gutter, \$14,650; asphalt, vit. brick or bitulithic, bituminous macadam or Hassam cement concrete pavement, stone curb, \$11,400; same with combined curb and gutter, \$10,500; macadam with stone curb, \$7,400 same with combined curb and gutter, \$6,800.

Tottenville, S. I., N. Y.—Borough Board will take up question of sidewalks in this town and in other parts of Borough of Richmond where no concrete or flag walks have been laid.

Winston-Salem, N. C.—Forsythe County Road Supervisors have ordered construction of macadamiz on Clemmonsboro road.

Dunseith, N. D.—Council will open bids in April for construction of sidewalks and crosswalks.—W. T. Hosmer, City Auditor.

Grand Forks, N. D.—City has rejected bids for paving in District No. 16, comprising 10,500 sq. yds.

Akron, O.—City will pave seven miles of streets during summer.

Cincinnati, O.—County Commissioners have ordered plans and specifications prepared for improvement of Harrison Pike, at an estimated cost of \$15,700; also for Bickington Pike, at estimated cost of \$16,227; Surveyor has estimated cost of improving South ave. and Werk rd. at \$8,815.

Cleveland, O.—East Collamer ave., Colwood, will be paved; \$22,700 available.

Cleveland, O.—If Mathews bill, which already has passed the Senate is successful in the House, city will let contracts for paving 33 miles of streets during first six months of year.

Columbus, O.—City Solicitor Weinland is urging establishment of some continuous system of sidewalk repair.

Napoleon, O.—Henry County has sold \$49,500 stone road improvement bonds to Hayden, Miller & Co., Cleveland, at \$1,024 premium.

Newport, O.—Improvement Committee of General Council is considering \$200,000 worth of street improvements.

Shawnee, Okla.—City will consider election on \$200,000 bonds for construction of boulevard.

Roseburg, Ore.—Citizens have voted \$40,000 paving bonds.

Harrisburg, Pa.—Extensive improvements along North Front st. are contemplated.

McKeesport, Pa.—City Engineer Smith has estimated cost of improving streets as follows: 6th ave., \$12,107.50; Ringgold st., \$6,060; Sheridan st., \$1,863; White st., \$7,170; 9th ave., \$5,369, and Coursin st., \$4,668.

New Castle, Pa.—Street Committee has recommended paving of five streets.

Pittsburg, Pa.—Public Works Committee has recommended immediate letting of contracts for removal of the Hump and raising Federal st. above flood level.

Scranton, Pa.—Chief Wm. Shunk, of Bureau of Engineering, has completed plans for four miles of paved streets; work includes about 143,359 sq. yds. of asphalt, cost \$410,479.85; 69,550 sq. yds. stone block and asphalt, \$161,749.60; stone block, 8,159 sq. yds., \$22,894.35; brick and stone block, 2,074 sq. yds., \$5,609.85, and brick, 1,528 sq. yds., \$4,181.50.

York, Pa.—Special Committee, Chairman Rose, has recommended use of bitulithic in paving streets.

Providence, R. I.—Widening of Elmwood ave. is being considered.—Councilman A. G. Pearce is interested.

Anderson, S. C.—Anderson Traction Co. will lay cement crossties beneath rails in

Joliet, Ill.—City is considering construction of sewer in Madeline st.; cost \$1,529.03.

Joliet, Ill.—Bids have been asked for sewer in Broadway.

Rockford, Ill.—City has not as yet let contract for construction of West End storm sewer.—S. B. Hand, City Engineer.

Tilton, Ill.—Plans have been completed by Engineer F. L. McCann, Garrett Bldg., Danville, for four to five miles of drain tile work; bids will be received in about 50 days.

Waukegan, Ill.—Council has passed an ordinance for constructing sewers in portions of various streets.

Elkhart, Ind.—Board of Public Works has ordered sewers constructed on four streets.

Hammond, Ind.—Board of Public Works has instructed City Engineer to prepare plans and specifications for sewer in Ash st.—Adam R. Ebert, President.

Kokomo, Ind.—City Engineer Jackson Morrow, City Hall, has prepared plans for 3,000 ft. of 12-in. and 15-in. sewer.—Ben Havens, Clerk Board of Public Works.

LaFayette, Ind.—Plans have been prepared by City Engineer J. B. Truman, 3 Court House, for 2,000 ft. of 10-in. reinforced concrete sewer in Greenbush st.; also for a reinforced concrete and vit. pipe sewer in Congress st.; cost \$59,000.—A. Krabbee, Clerk Board of Public Works.

Logansport, Ind.—City is considering construction of storm sewer at 14th st.

Vincennes, Ind.—Hering & Fuller, New York, will prepare plans for proposed sewer system.

Greenfield, Ia.—Surveys are being made for system of sewers.

Mason City, Ia.—City is considering construction of lateral sewer in the Willow Creek district.

Herington, Kan.—City will construct sanitary sewers; plans by Engineers Burns & McDonnell, 821 Scarritt Bldg., Kansas City, Mo.

Osage City, Kan.—Plans are being prepared by Burns & McDonnell, Engineers, 821 Scarritt Bldg., Kansas City, Mo., for sanitary sewers.

Peabody, Kan.—Bids will be received until 7.30 April 5, by City Clerk, for furnishing necessary materials and labor for constructing four miles of sanitary sewers from 8 to 12 in. in diameter, with all manholes, lampholes, flush tanks, etc.; also reinforced concrete septic tank.—J. W. Mayberry, Lyndon, Engineer.

Seneca, Kan.—City will construct sanitary sewers; Burns & McDonnell, 821 Scarritt Bldg., Kansas City, Mo., Engineers.

Winchester, Ky.—City is contemplating construction of sewerage system; engineer will be employed.—S. B. Tracy, City Clerk.

Lake Charles, La.—Citizens will vote on sewerage proposition.

Springfield, Mass.—Laurel Park Association has appointed committee to secure plans for sewer system.—Rev. J. P. Kennedy, Holyoke, President.

Detroit, Mich.—Council has ordered bids advertised for construction of four vit. crock lateral sewers through public alleys.—J. J. Haarer, Commissioner Public Works.

Zeeland, Mich.—Council has adopted resolution looking to establishment of sewer system; cost \$15,000.

Minneapolis, Minn.—Assistant City Engineers, Ben Durham and Carl Illstrup, have estimated cost of constructing proposed sewers at \$671,085.

Red Lake Falls, Minn.—Council desires correspondence with parties wishing franchise for sewer and water systems.

Carthage, Mo.—City is considering construction of district sewer this spring; cost \$15,000.—F. B. Newton, City Engineer.

Butte, Mont.—Council has adopted resolutions providing for the construction of sanitary sewers on two streets.

Helena, Mont.—City proposes to construct sewers in Broadwater addition; cost

about \$7,000.—Chas. W. Helwick, City Engineer.

Whitefish, Mont.—Plans are being prepared by Civil Engineer F. E. Marsh, Kalispell, for sewer system with disposal plant.

Milford, Neb.—Martz Bros., Seward, Neb., are preparing plans for proposed sewer system; cost \$20,000.

Manchester, N. H.—Council favors \$40,000 bond issue for sewers.

Elizabeth, N. J.—Council has decided to construct sewer in Wood ave.

Morristown, N. J.—Board of Aldermen has passed resolution to employ competent engineer to test main sewer pipes and see if water is seeping into sewers.

Binghamton, N. Y.—Council has decided to construct sewers on Gaines and Charles sts.

Hamburg, N. Y.—Citizens will soon vote on construction of sewers.

Liverpool, N. Y.—Village is considering construction of sewer system.

New York, N. Y.—Bids will be received Mar. 24 for constructing sewers in five streets.—C. C. Miller, President, Borough Bronx.

Poughkeepsie, N. Y.—Superintendent of Sewers will report to Board of Public Works as to what new sewers are necessary.

Watertown, N. Y.—Plans are being prepared by City Engineer for construction of several sewers.

Akron, O.—Plans have been prepared for sewer improvements in east end; city will spend thousands of dollars on sewers.

Alliance, O.—Council has passed resolution for constructing sewer on S. Arch ave., W. Harrison and Vine sts.

Amherst, O.—L. E. Chapin, Canton, will soon make report preparatory to installation of sewer system and disposal plant.

Amherst, O.—Surveys are being made by H. W. Crisp, Elyria, for municipal sewerage system.

Ashtabula, O.—Council has instructed Engineering Department to prepare plans and specifications for sewer in South st; City Engineer Lewis A. Amsden will also prepare plans and specifications for a sanitary sewer in Drexel st.—F. W. Wagner, City Clerk.

Cleveland, O.—Resolution authorizing a special election on bonds for completion of intercepting sewer system is being considered by Councilman French.

Lorain, O.—Council has passed ordinance for issuance of \$14,500 bonds for construction of a submain sewer and lateral sewers.—F. J. King, Mayor.

Mansfield, O.—City Engineer Hursh has prepared estimates of cost of proposed storm water sewer.

Seville, O.—Council has decided to establish sewer system for entire village.

Wooster, O.—Council is considering construction of storm drain sewer in southern part of city.

Altus, Okla.—Bids will be received April 11, 6.30 p. m., for \$35,000 sewer bonds.—H. C. Gilliland, City Clerk.

Mountain View, Okla.—Citizens have voted \$45,000 bonds for construction of sewers and electric light plant and extension of water system.

Tahlequah, Okla.—Smedley & Hanlove, Muskogee, will make survey and draw plans and specifications for sanitary sewer system.

St. Helens, Ore.—Construction of sewer system is being considered.

Erie, Pa.—City Engineer Briggs has recommended rebuilding of canal sewer; cost \$15,000.

Harrisburg, Pa.—City Engineer Smith soon will be called upon to employ consulting engineer to prepare plans for proposed new sewage system.

Williamsport, Pa.—Council has passed second reading ordinance authorizing Os-

burn Congeltun to prepare plans for sewage disposal.

Columbia, S. C.—Granby Cotton Mills has had plans prepared for sewer system in mill village; construction mainly by company.

Knoxville, Tenn.—Council has instructed J. E. Thompson, City Engineer, to prepare necessary data for cost of Third Creek main sanitary sewers and its laterals.

Morristown, Tenn.—City has selected Charles E. Collin, Philadelphia, Pa., as engineer for proposed sewer system.

Tioga, Tex.—Rains Tioga mineral wells will install sewerage system and septic tank, and E. L. Dalton, of Dallas, has been engaged to draw plans and specifications; Texarkana concern has contract for pipe.

Spokane, Wash.—Council has adopted resolution to prepare plans for sewers on five streets.

Oshkosh, Wis.—Plans have been prepared for the construction of sewers in three streets.

Waterloo, Wis.—Council will consider election on \$28,000 bonds for sewers and water works.

Wheatland, Wyo.—Citizens will vote April 22 on \$20,000 bonds for sewers.

Hamilton, Ont., Can.—City Engineer Macallum has estimated total cost of the sewers required in the east end annex at \$160,000.

London, Ont., Can.—Plans have been completed for the construction of new sewers and extensions to the storm water sewers at a cost of \$50,000.—Willis Chapman, Toronto, Consulting Engineer; A. O. Graydon, City Engineer.

Winnipeg, Man., Can.—Municipal Council has decided to construct sewers as follows: Michton ave., cost \$1,665; Bannerman ave., cost \$1,396; Pine st., \$7,561; Ashburn st., \$7,737; Strathcona st., \$7,913.

CONTRACTS AWARDED

Joliet, Ill.—Sewers, Hobbs ave., to C. R. Spears; Pleasant st., to Robert Shannon; Illinois st., to Sandiford & Mitchell; Ottawa st., to Wm. Moran, and Hunter ave., paving, to Ross & Curtis.

Muscatine, Ia.—Sewers, District No. 1, to Independent Construction Co., 1,730 ft. 8-in. pipe, 55c., 2,070 ft. 12-in., 77c., 720 ft. 15-in., 96c., 1,150 ft. 18-in. \$1.15, 625 ft. 12-in., 60c., 16 manholes \$29,000, 25 catch basins \$19; total \$5,873.10; District No. 3, to Epple-Schlosser Co., 6,595 ft. 8-in. pipe 40c., 470 ft. 12-in., 60c., 16 manholes \$27, 1 lamphole \$15; total \$3,398.20.—J. J. Ryan, City Engineer.

Minneapolis, Minn.—Sewer pipe, to Minneapolis Sewer Pipe Co., Hopkins.

Toledo, O.—Sewers, Oakdale ave., 1,630 ft. to D. W. Shirts, \$1,080.84; Elizabeth st., 915 ft., to J. W. McMahon, \$1,292.91; alley from Raymer to Nasby st., 850 ft., to J. W. McMahon, \$1,289.75; alley west of Chestnut, south of Central ave., 2,350 ft., to D. W. Shirts, \$4,274.78.

BIDS RECEIVED

Gloucester, N. J.—Sewer work: B. F. Sweeten & Son, 15-in. terra-cotta clay pipe sewer, 75c. per lin. ft.; 12-in., 67c.; manholes and covers, \$18; inlets and connections with sewers, \$15; 12-in. Y branch, \$2.33; for each extra foot of depth over 6 ft., 7½c. J. W. Smith, 12-in. terra-cotta pipe, 55c. per lin. ft.; 15-in., 66½c.; manholes and covers, \$28.50; inlets and connections, \$20; 12-in., Y, \$2; 15-in. Y, \$2.75; for each extra foot of depth over 6 ft., 6c. per lin. ft. Emma Black, 15-in. terra-cotta pipe, 85c.; 12-in., 73c.; manholes and covers, \$28; inlets and connections, \$16.

Grand Forks, N. D.—Three lateral sewers in District No. 9; J. M. Carroll, \$5,730; P. McDonnell, Duluth, \$6,670; B. O. Paulness, \$7,410; Pastoret-Lawrence Co., Duluth, \$5,929; Northern Construction and Engineering Co., \$6,079.

Plymouth, Wis.—Following bids were received March 10 for sewer construction.—C. W. Jackson, City Engineer.

NAME	9,428 ft. of 6-in. Vitrified Pipe	13,783 ft. 8-in. Vitrified Pipe	630 ft. 10-in. Vitrified Pipe	410 ft. Cast Iron Pipe	84 ft. 8-in. River Crossing	848 ft. 8-in. Deep Dig.	49 Man- Holes, Each	28 Lamp- Holes, Each	Pump Pit	Pump and Motor	Total
Eul, Cochems & Nebel, Sturgeon Bay..	\$0.52	\$0.61	\$0.65	\$0.90	\$1.14	\$1.90	\$30.00	\$5.75	\$260.00	.....	\$16065.45
Thos. Wooley, La Crosse..	.60	.73	.85	.90	1.75	1.90	35.00	5.00	485.00	.....	19129.89
Thill, Manning Whalen Co., La Crosse..	.50	.60	.65	.80	1.77	1.68	40.00	6.00	600.00	.....	16697.18
J. Mulholland & Son, Kaukauna..	.55	.65	.65	.....	2.00	3.00	30.00	5.00	.....	.....	16698.85
E. R. Harding Co., Racine..	.53	.69	.75	.75	2.00	4.00	35.00	6.00	495.00	.....	16832.21
Lee & Everroad, Columbus, Ind..	.57½	.61½	.66½	.80	1.20	1.51	40.00	6.00	113.60	.....	16970.69
Ottawa Construction Co., Ottawa, Ill..	.54	.59	.70	.90	1.05	1.05	35.00	10.00	.....	.....	16116.29
Robert Nelson, Racine..	.82	.87	1.04	1.21	2.29	2.13	35.00	8.00	276.00	\$540.00	23824.83
Nicholas Quinn, Madison..	.73	.87	.98	1.10	1.50	2.30	40.00	5.00	335.00	550.00	23053.05
Herman Hohensee, Milwaukee..	.58	.74	.79	1.00	2.50	2.75	35.00	10.00	380.00	575.00	19735.36
T. Szukalski, Milwaukee..	.85	.91	.97	.97	1.50	2.48	38.00	5.00	478.00	498.00	24877.13
O'Farrell Cons. Co., Dubuque, Ia..	.59	.69	.79	1.00	3.00	4.00	40.00	8.00	.....	.....	18336.49
Wm. Simonsmeir, Plymouth..	.50	.67	.75	.49	.67	2.50	45.00	5.00	161.80	750.00	17830.99
Gould Co., Chicago..	.....	.....	.....	.....	.....	.....	.....	.....	.....	495.00	.....
Yeoman Bros., Chicago..	.....	.....	.....	.....	.....	.....	.....	.....	.....	496.00	.....
Hennion & Hubbell, Chicago..	.....	.....	.....	.....	.....	.....	.....	.....	.....	328.90	.....
P. W. Wellward, Aurora, Ill..	.....	.....	.....	.....	.....	.....	.....	.....	.....	445.00	.....

Muscatine, Iowa.—Sub-sewerage District No. 19 of Main Sewerage District No. 1, bids opened March 10, 1910; contract awarded to Independent Const. Co.—James J. Ryan, City Engineer.

	8-in., 1,730 Feet	12-in., 2,070 Feet	15-in., 720 Feet	18-in., 1,150 Feet	21-in., 625 Feet	Man- holes, 16	C. B., 25	Total
A. Korneman.....	\$0.75	\$1.00	\$1.22	\$1.50	\$0.85	\$35.00	\$19.00	\$7,537.15
P. F. Trenkenschuh.....	.65	.75	1.00	1.20	.80	34.50	25.00	6,454.00
R. K. Smith.....	.615	.89	1.225	1.61	.69	35.00	25.00	7,256.00
Independent Construction Co.....	.55	.77	.96	1.15	.60	29.00	19.00	5,873.10
Epple-Schlosser Co.....	.67	.85	.97	1.29	.75	33.00	23.00	6,672.25
Engineer's Estimate.....	.72	.86	.99	1.25	.80	35.00	20.00	6,736.00

Muscatine, Iowa.—Sub-sewerage District No. 4 of Main Sewerage District No. 3, bids opened March 10, 1910; contract awarded to Epple-Schlosser Co.—James J. Ryan, City Engineer.

	8-in., 6,593 Feet	12-in., 470 Feet	Man- holes, 16	Lamp- holes, 1	Total
A. Korneman.....	\$0.70	\$0.80	\$29.00	\$9.00	\$5,464.10
Epple-Schlosser Co.....	.40	.60	29.00	15.00	3,398.20
Independent Construction Co.....	.55	.63	27.00	10.00	4,364.25
P. F. Trenkenschuh.....	.50	.70	30.00	15.00	4,120.50
R. K. Smith.....	.555	.675	33.00	10.00	4,514.36
Engineer's Estimate.....	.50	.70	30.00	20.00	4,125.50

WATER SUPPLY

Athens, Ala.—Boilers will be purchased for pumping engines.—Fred Wall, Mayor.

Lafayette, Ala.—Town has voted \$40,000 bonds for erecting water works, constructing sewers and improving light plant.

Glendale, Cal.—Citizens are urging municipal ownership of water works.

Ocean Park, Cal.—City is considering extension of water mains to Garden district and Short Line Beach.

Sacramento, Cal.—East Sacramento Water Co. will construct large concrete tank, capacity 90,000 gals.; plans adopted.

Sierre Madre, Cal.—Municipal water works system will be established.

Boulder, Col.—City will construct storage dam at Albion Lake, capacity 70,832 cu. ft.; cost \$63,000, exclusive of machinery.—A. A. Greenham, Mayor.

Wiley, Col.—Citizens have voted \$10,000 bonds for water supply; contracts will at once be let for remaining portion of system.

Hartford, Conn.—Water Commissioners are considering plan to increase water supply to cost about \$528,000.

Putnam, Conn.—Purchase or installation of a water system is being considered.

Washington, D. C.—District has \$14,000 available for purchase of meters.

Kissimmee, Fla.—Town has voted \$43,000 for installation of water and sewer systems.

Atlanta, Ga.—Committee on Improvement of Water Works has adopted resolution calling for laying 43 miles of piping, of which 30 miles will be new and 13 miles replaced by larger mains and reaid in residence sections.—R. M. Clayton, City Engineer.

Dalton, Ga.—Citizens will vote on \$30,000 bonds for extension and improvement of water works system.

Donaldsonville, Ga.—Citizens will vote on bonds for water works and electric light plant; cost \$25,000.

Macon, Ga.—City is considering purchase of water plant.

Cairo, Ill.—City is considering \$11,000 appropriation for water hydrants.

Galesburg, Ill.—Finance Committee is considering \$75,000 bond issue for improvement of water system.

Joliet, Ill.—City will receive bids for construction of water mains on Meda ave.; cost \$820.12.

Lincoln, Ill.—Extensions will be made to water system, inc'ding new hydrants.

Pekin, Ill.—Pekin Water Works Co. will spend large sum in improvements; if extension asked by property owners in paving districts are made addition will mean outlay of \$7,000.

Steger, Ill.—Village is planning to install system of water mains; estimated cost \$2,882.98.

Waukegan, Ill.—Council has passed an ordinance for the construction of a system of water supply pipes in Caroline pl. and George ave.

Bloomington, Ind.—Board of Trustees of Indiana University has approved plan of Faculty Committee for water plant; cost \$20,000.

Connellsburg, Ind.—Installation of a filtering system is being considered for canal water, or well system may be instituted. Address L. L. Broadus, L. K. Tingley or J. M. Sanders.

Hammond, Ind.—City will lay lead water pipe in Waltham st.; bids have been readvertised for lead water pipe contract in Highland st.—Adam R. Ebert, President Board of Public Works.

Mitchell, Ind.—City has decided to install system of water works.

Logan, Ia.—City will make extensions to water system.

Ocheyedan, Ia.—Citizens will vote March 28 on \$12,000 bonds for construction of water works system.

Sibley, Ia.—Citizens will vote March 28 on \$12,000 bonds for construction of municipal water works.

Clifton, Ky.—Hill & Co., First National Bank Bldg., Cincinnati, O., have been selected as engineers for construction of water works; cost \$12,000.

Kansas City, Kan.—Citizens have voted \$500,000 water works bonds.

Mulberry, Kan.—Council is considering granting franchise to company for construction of water works.

Stafford, Kan.—Citizens have voted \$45,000 bonds for extension of water works system and purchase of electric light plant.

Lexington, Ky.—Light and Water Committee has recommended installation of 15 fire hydrants.

North East, Md.—G. A. M. Johnson, of Leslie, has applied to Town Commissioners for water franchise.

Attleboro, Mass.—Finance Committee has recommended appointment of committee to investigate proposed addition to water storage; cost \$85,000.

Fairhaven, Mass.—Selectmen will consider plans for insuring town supply of water adequate for manufacturing and domestic purposes.

Hyde Park, Mass.—Water Commissioners will receive bids March 25, 8 p. m., for \$452,000 water loan bonds.

Lowell, Mass.—Water Board has made request for five tons of pig lead, price not to exceed 5 1/4 c.; also for necessary supply of water meters.—Robert W. Van Tassel, President.

Marblehead, Mass.—Town has voted \$12,000 for installation of water meters.

Winthrop, Mass.—City has awarded \$20,000 water bonds to Blodget & Co. at 101.16.

Springfield, Mass.—Laurel Park Association has appointed committee to secure plans for improving water system.—Rev. J. P. Kennedy, Holyoke, President.

Harbor Springs, Mich.—Village has voted \$4,500 bonds to construct and install water works system.

Saginaw, Mich.—Enlargement of the water and filtration system is being urged.

Howard Lake, Minn.—Council has decided to extend the water main out into lake 400 or 500 ft.

Red Lake Falls, Minn.—Council desires correspondence from parties desiring franchise for the construction of a water works system.—Joseph Ferrault, City Clerk.

Utica, Minn.—Plans will be prepared by National Construction Co., South Bend, Ind., for proposed water plant.

Brookhaven, Miss.—Council is considering construction of 1,000,000-gal. water tank at municipal light and water plant.

Fairbury, Neb.—Citizens will vote April 26 on \$135,000 bonds for the purchase or installation of water works and light plant.

New Castle, N. H.—Village will vote on extension of its water system.

High Bridge, N. J.—Citizens will vote on \$35,000 bond issue for water supply extensions.

Mt. Morris, N. J.—Village Board of Health will send notice to Mills Water Works Co., owners of the village water system, that it should clean all its springs, reservoir and watershed near the springs at once.

Newton, N. J.—Council will take up matter of extending mains to factories.

Canajoharie, N. Y.—Council is considering purchase of present water works plant.

Trenton, N. J.—Engineers Hering & Fuller are making surveys in rear of State

Capitol with the view of locating the city's proposed filtration plant in that vicinity.

Woodbury, N. J.—Council will consider water works extensions.

New York, N. Y.—Commissioner Thompson, of Department of Water Supply, Gas and Electricity, has asked for \$300,000 appropriation for establishment of plant to test every water meter in use in city.

Parkville, N. Y.—Installation of water system is being considered.

Seneca Falls, N. Y.—Water company is considering extensive improvements, including three miles of cement water mains.

Syracuse, N. Y.—Board of Contract and Supply has asked for bids for 650 tons of c.-l. pipe from 6 in. to 12 in. in diameter.—G. H. Beebe, Superintendent.

East Spencer, N. C.—Citizens will vote April 12 on \$25,000 bonds for water works system.

Spencer, N. C.—Citizens will vote April 12 on \$25,000 bonds for water works system.

Grand Forks, N. D.—City Engineer Ray Wickham is preparing plans for improvements to water system; cost \$25,000; also for intake pipe and filter.

Dayton, O.—City is considering installation of high water system with double mains to central or congested district.

Elyria, O.—Board of Control has voted \$25,000 bond issue for water service extensions.

Newport, O.—Bill has passed Senate enabling second-class cities to extend water main system outside of corporation line; city will consider extension of lines to Bellevue, Dayton, Clifton and Southgate.

Nottingham, O.—Village is considering construction of water mains; cost about \$130,000.

Springfield, O.—Service Directors will expend \$3,000 in extending water mains.

Utica, O.—Village will vote April 5 on construction of water works.—J. W. McKeely, Clerk.

Aitius, Okla.—Bids will be received April 11, 6:30 p. m., for \$130,000 water extension bonds.—H. C. Gilliland, City Clerk.

Medford, Okla.—Citizens have voted \$12,000 bonds for extension of water works.

Mountain View, Okla.—City has voted \$45,000 bonds for extension of water system, construction of electric light plant and sewer system.

Pittsburg, Okla.—Pittsburg Water & Light Co. has been incorporated to construct water works and electric light plant.

Gresham, Ore.—City will issue \$15,000 bonds for municipal water supply.

Oregon City, Ore.—Water Commissioners will install another filter unit, capacity 2,000,000 gals.; cost \$4,000.

Bethlehem, Pa.—Water Committee will advertise for bids for supplying lead pipe and oil.

Birdsboro, Pa.—Citizens will vote on purchase of water works plant.

Chambersburg, Pa.—Estimates of cost or survey for pipe line to conduct gravity water from Beach River, Caledonia, to town, will be obtained at once.

Greencastle, Pa.—Town will issue \$40,000 of bonds to cover cost of proposed water plant.

Harrisburg, Pa.—Board of Public Works has approved plans and specifications for Susquehanna River dam.

Shenandoah, Pa.—Valley Water Co. will construct 10,000,000-gal. reservoir and place 25 hydrants in the College Hill section.

Woonsocket, R. I.—Superintendent Ballou has recommended purchase of site for pressure reservoir and extension of mains.

Tyndall, S. D.—Engineer Oscar Claussen, 514 German-American Bank Bldg., St. Paul, Minn., has completed plans for 1,600 ft. of 8-in. water main.

Childress, Tex.—City has selected John B. Hawley, Fort Worth, Tex., as engineer for water works improvements, including pumping station at Lake Childress and laying 10,000 ft. of 8-in. water piping; cost \$12,500.

Crowell, Tex.—Crowell Water Supply Co. will construct gravity system water supply; cost \$25,000.—J. L. Strickland, President.

Dallas, Tex.—City Commission has ordered bids advertised for sinking five artesian wells to Paluxy stratum or flow; bids for drilling artesian well to the Trinity sands have been rejected.—D. F. Sullivan, Water Works Commissioner.

Lake Cliff, Tex.—Plans are being prepared for construction of dam, core wall and spillway.

Nocona, Tex.—Citizens will vote on \$25,000 water works bonds.

Rice, Tex.—Westmoreland Supply Co., 1005 Scanlon Bldg., Houston, Tex., is considering installation of 10,000-gal. water plant from flowing 4-in. well, pneumatic tank and two miles 4-in. and smaller pipe.

San Angelo, Tex.—Council has decided to install additional fire plugs in Park Heights and Angelo Heights addition.

Annabella, Utah.—Town will soon vote on bonds for securing good water system.—Elroy Thurston, Clerk.

Portsmouth, Va.—Authority has been granted city to issue \$600,000 water works bonds.

Suffolk, Va.—Town will install water works system.

Rutland, Vt.—Citizens are considering election on \$20,000 bonds for repairs to water system.

Raymond, Wash.—Raymond Water Co. will extend mains up the South Fork.

Seattle, Wash.—Citizens have voted bonds for water and light extensions.

Walla Walla, Wash.—Water Committee has taken up matter of installation of storage reservoir.—Eugene Tausick, Mayor.

Jefferson, Wis.—Citizens will vote on purchase of water company's plant.

Medford, Wis.—Council has passed ordinance for issuance of \$30,000 for installation of system of water works.

Milwaukee, Wis.—City Engineer C. J. Poetsch has recommended erection of power station in Menominee Valley to give that section high water pressure.

Byron, Wyo.—The Big Horn Water, Light & Power Co. will furnish water, light and power to Byron, Cowley and Lovell.

Wheatland, Wyo.—Citizens will vote April 22 on \$45,000 bonds for construction of water works system.

Arcola, Sask., Can.—Council is having plans prepared for extensions to the water supply of siphoning from present source to town.

Chippawa, Ont., Can.—Manufacturers are urging construction of municipal water works.

Nanaimo, B. C., Can.—Citizens will vote on \$12,000 loan for construction of cement dam at No. 1 reservoir.

Port Dalhousie, Ont., Can.—Council is considering construction of water works; plans prepared.

St. John, N. B., Can.—City Engineer F. W. Murdock will prepare plans and estimates of cost for renewal of pipes in distribution system.

Toronto, Ont., Can.—West Toronto will issue \$271,397 of bonds for extension of 20 and 12-in. mains.

CONTRACTS AWARDED

Sacramento, Cal.—Pipe for Great Bull Run water system, to Schaw-Batcher Co., city, \$1,259,782; 14 miles of 14-in. and 10 miles of 52-in. pipe will be needed.

South Bend, Ind.—Furnishing material and driving four deep wells 10 in. diameter and 85 ft. deep, to Robt. H. Kersey, city, \$2,100, using brass screens.

Sioux City, Ia.—9,000 ft. 24-in. water main, to Lewis & Leeder, 75c. per lin. ft.

Boston, Mass.—2,350 tons c.-i. water pipe and 20 tons specials, to Florence Iron Works, 400 Chestnut st., Philadelphia, Pa., \$30 per ton for 3-in. pipe, \$24.60 per ton for 4 to 16-in. pipe and \$50 per ton for specials; total cost \$58,372.

Lawrence, Mass.—Furnishing 10 tons of pig lead, to P. F. Lynch, \$4.89 1/2 per 100 lbs.

Vicksburg, Miss.—Furnishing 350 ft. c.-i. pipe and constructing two miles of 5-ft. trench, to Sou Paving and Construction Co., \$19,950.90.

Haddonfield, N. J.—Furnishing meters, to Thomson Meter Co.; house connections and curb boxes, to I. C. Manning; furnishing small pipe and tapping machine, to H. A. Fulmer Co.

Syracuse, N. Y.—60,000 lbs. of lead pipe, Pierce, Butler & Pierce, \$3,120; 40,000 lbs.

Portland, Ore.—Bids were opened by the Water Board March 8, for furnishing material and constructing steel conduit from head-works to Mt. Tabor, a total approximate distance of 24 miles, as follows: (a) Schaw-Batcher Co. Pipe Works, Sacramento, Cal. (riveted steel), awarded contract; (b) Grant Smith & Co., Spokane, Wash. (riveted steel); (c) Buehner Co., Portland, Ore. (lock bar pipe); (d) Pacific Construction Co., San Francisco, Cal. (lock bar pipe); (e) Jas. Black Masonry & Construction Co., Seattle and St. Louis (lock bar or riveted pipe); (f) Jos. Paquet & Co., Portland (lock bar pipe); (g) Puget Sound Bridge & Dredging Co., Seattle, Wash. (riveted steel); (h) Jos. Paquet & Co., Portland (riveted steel); (i) International Contract Co., Seattle, Wash. (riveted steel).—D. D. Clarke, Engineer of Water Board; Frank T. Dodge, Superintendent.

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
21,145 ft. 52-in. steel pipe, 1/4-in. thick.....	\$8.90	\$8.70	\$8.65	\$8.80	\$8.62	\$9.10	\$10.00	\$9.55	\$12.00
29,657 ft. 52-in. steel pipe 5-16 in. thick.....	11.00	10.45	10.40	9.56	10.48	11.10	12.00	11.80	13.50
1,338 ft. 52-in. steel pipe 1-in. thick.....	11.00	12.50	12.30	12.85	12.37	13.00	14.00	13.40	15.00
775 ft. 52-in. steel pipe 7-16 in. thick.....	13.00	14.30	14.30	15.05	14.19	14.85	16.00	15.45	17.00
75,379 ft. 44-in. steel pipe 1-in. thick.....	.65	7.50	7.65	7.56	7.49	8.40	7.74	8.75	9.00
60 air valves (4-in.) with 4-in. gate valves.....	85.00	100.00	90.00	82.50	100.00	90.00	120.00	90.00	100.00
41 blow-offs (8-in.) with 8-in. gate valves.....	35.00	85.00	60.00	70.80	75.00	40.00	100.00	40.00	50.00
2,360 ft. 8-in. kalomein blow-off pipe.....	1.25	2.00	1.50	2.00	2.00	1.60	1.70	1.60	2.00
60,000 lbs. steel in trestles.....	.07	.10	.06	.055	.08	.07	.06	.07	.08
480 cu. yds. concrete.....	12.00	12.00	10.00	20.00	10.00	12.30	14.00	12.30	20.00
1,085 lin. ft. boxing for 52-in. pipe.....	2.80	2.50	1.50	3.87	3.00	2.00	7.50	2.00	6.00
1,290 lin. ft. boxing for 44-in. pipe.....	2.50	2.50	1.50	3.25	3.00	2.00	6.00	2.00	5.00
1 Venturi meter for 52-in. pipe with attachments in place.....	2,300.00	3,000.00	3,000.00	3,180.00	3,000.00	5,600.00	4,000.00	5,600.00	3,500.00
1 Venturi meter for 44-in. pipe with attachments in place.....	2,100.00	2,300.00	2,200.00	2,770.00	2,900.00	4,900.00	3,000.00	4,900.00	3,200.00
195,000 cu. yds. earth excavation and refill.....	.70	.65	.65	.69	.90	.54	.63	.54	.70
5,500 cu. yds. loose rock excavation.....	1.00	.70	1.50	1.25	1.50	1.00	.90	1.00	1.00
1,500 cu. yds. solid rock excavation.....	2.50	1.75	3.00	2.50	3.00	2.00	2.50	2.00	2.00
25,000 cu. yds. gravel back fill.....	1.25	.75	1.75	2.00	1.25	2.60	2.00	2.60	3.00
40,000 lin. ft. 3-in. drain tile.....	.11	.10	.06	.07	.10	.06	.26	.06	.50
40 M ft. lumber for pipe supports, manhole and air valve boxes, per M.....	40.00	35.00	25.00	35.50	60.00	66.00	40.00	66.00	40.00
26,000 cu. yds. earth excavation for roadway.....	.50	.25	.35	.41	.75	.50	.40	.50	.50
30 acres clearing and grubbing.....	150.00	300.00	65.00	148.00	300.00	210.00	250.00	210.00	200.00
Total.....	\$1,259,782	\$1,297,105	\$1,321,789	\$1,322,628	\$1,376,032	\$1,423,009	\$1,441,859	\$1,480,667	\$1,673,195